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(54) INFORMATION FILTERING DEVICE AND INFORMATION FILTERING METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an information filtering device capable of arranging information correspondingly the necessity degree of a user and providing it to the user in an order from the information of high necessity.

SOLUTION: This information filtering device converts plural key words allocated to the information to a vector by a vector generation part 1, calculates a score by using the vector and teacher signals from the user by a score calculation part 3, calculates the necessity and reliability from the score by a necessity calculation part 7 and calculates metric used when the score calculation part 3 calculates the score based on the simple evaluation of the necessity/unnecessity of the information supplied from the user by a metric learning part 19.

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CLAIMS

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[Claim(s)]

[Claim 1] Information filter equipment characterized by taking out predetermined

information from an electron, the information storage medium through light, or an information communication network, having a means to show information, and the input terminal into which said information inputs whether it is the need, and changing the method of sequencing informational presentation using the input from said input terminal at least.

[Claim 2] Sequencing of informational presentation is information filter equipment according to claim 1 which calculates a score signal from at least one metric signal calculated from the vector signal which changed the keyword group signal which consists of two or more keyword signals using a dictionary, and the input that information is as it is the need, and determines the sequence of informational presentation using the score signal.

[Claim 3] A metric signal is information filter equipment according to claim 2 characterized by to be the signal calculated from the signal which shows [ the need of being inputted from the shown information and the input terminal, or ] that it is unnecessary, and to be the negative metric signal which consists of information when the affirmation metric signal which consists of information when the signal inputted from said input terminal is required, and the signal inputted from said input terminal are unnecessary.

[Claim 4] It is information filter equipment according to claim 3 characterized by being the autocorrelation matrix of a vector signal when an affirmation metric signal is the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is required and a negative metric signal has the unnecessary signal inputted from an input terminal.

[Claim 5] An affirmation metric signal and a negative metric signal are matrices, respectively. The (ij) component of said matrix The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where the information in which the i-th keyword signal and the j-th keyword signal were included simultaneously was needed, Information filter equipment according to claim 3 characterized by calculating said i-th keyword signal and said j-th keyword signal from the frequency where information included simultaneously was made unnecessary.

[Claim 6] The (ij) component of a matrix is information filter equipment according to claim 5 characterized by being the signal by which the difference from the probability distribution which shows whether the information in which the probability distribution which shows whether information is required or it is unnecessary, the i-th keyword signal, and the j-th keyword signal were included simultaneously is required, or it is unnecessary is evaluated quantitatively.

[Claim 7] A means to change two or more keyword signals into a vector signal at the sequencing sake of informational presentation, The score count section which calculates an affirmation score signal and a negative score signal using the affirmation

metric signal which consists of required information, the negative metric signal which consists of unnecessary information, and said vector signal, The judgment parameter signal which is the multiplier of the straight line which divides into required information and unnecessary information distribution of the point of the 2-dimensional flat surface which consists of said affirmation score signal and said negative score signal, Claim 1 **** 6 characterized by having the need [ of calculating a need signal and a dependability signal from said negative score signal ] count section in said affirmation score signal list, and deciding the sequence of informational presentation to be it with the magnitude of said need signal is information filter equipment of a publication either.

[Claim 8] A judgment parameter signal is information filter equipment according to claim 7 characterized by being calculated from hysteresis with the input that the information and said information on past are as it is the need.

[Claim 9] Claim 1 **** 8 which has the unread data storage section which memorizes unread information, the unread data write-in control section which arranges said unread information in order of the magnitude of a need signal, and is written in said unread data storage section, and the unread data output control section which presents said unread data in order so that the information needed from the information which flows one after another like electronic news may be shown preferentially is information filter equipment of a publication either.

[Claim 10] Adaptation dictionary equipment which is dictionary equipment for evaluating the need for informational, and is characterized by updating the content of the dictionary so that it may be suitable, in order that information may evaluate the need for informational using the signal which shows whether it is the need, and one or more keyword signals attached to said information.

[Claim 11] The renewal of the content of the dictionary is adaptation dictionary equipment according to claim 10 characterized by being carried out using the keyword cost signal calculated from the frequency of the needed information, the frequency of the information made unnecessary, the frequency where information including said keyword signal was needed about each keyword signal, and the frequency where information including said keyword signal was made unnecessary.

[Claim 12] The keyword cost signal of each keyword signal is adaptation dictionary equipment according to claim 11 characterized by being the signal by which the difference between the probability distribution which shows whether information is required or it is unnecessary, and the probability distribution which shows whether information including said keyword signal is required or it is unnecessary is evaluated quantitatively.

[Claim 13] The keyword cost signal of each keyword signal is adaptation dictionary equipment according to claim 12 with which it is the signal of such a big value that the difference between the probability distribution which shows whether information is required or it is unnecessary, and the probability distribution which shows whether the

information in which said keyword signal was included is required, or it is unnecessary is great, and said keyword cost signal is characterized by leaving a big keyword signal and canceling a small keyword signal.

[Claim 14] The count storage section which memorizes the count of total negation which shows the count which made unnecessary all the counts of affirmation that show the count for which the input from an input terminal needed the shown information, and said information, The adaptation dictionary storage section which memorized the count of negation which shows the count to which the count of affirmation which shows the conversion table which changes into a figure the character string which shows a keyword signal, and the count for which said character string needed the information included as a keyword signal, and said character string made unnecessary information included as a keyword signal, The input from the input terminal that the shown information is as it is the need, the keyword signal included in said information, Claim 10 **** 13 characterized by having the dictionary study section which updates the signal memorized by said all counts of affirmation, said count of total negation, and said adaptation dictionary storage section from the signal memorized by said all counts of affirmation, said count of total negation, and said adaptation dictionary storage section is adaptation dictionary equipment of a publication either.

[Claim 15] Claim 2 **** 9 characterized by having adaptation dictionary equipment indicated by either of claim 10 **** 14 is information filter equipment of a publication either.

[Claim 16] A keyword signal is either of claim 2 **** 9 characterized by including a classification code, or information filter equipment of a publication given in 15.

[Claim 17] For a keyword signal, claim 10 **** 14 characterized by including a classification code is adaptation dictionary equipment of a publication of a publication either.

[Claim 18] Information filter equipment according to claim 16 characterized by having adaptation dictionary equipment indicated by claim 17.

[Claim 19] The information filtering approach characterized by changing the method of sequencing informational presentation from the input which is the approach of taking out predetermined information from an electron, the information storage medium through light, or an information communication network, has like the stroke which presents information, and the input row into which said information inputs whether it is the need, and can be set like said input row.

[Claim 20] Sequencing of informational presentation is the information filtering approach according to claim 19 of calculating a score signal from the vector signal which changed the keyword group signal which consists of two or more keyword signals using a dictionary, and at least one metric signal calculated from the input that information is as it is the need, and changing the method of sequencing informational

presentation using the score signal.

[Claim 21] A metric signal is the information filtering approach according to claim 20 characterized by being the negative metric signal which consists of information when the affirmation metric signal which consists of information when the signal inputted from an input terminal is required, and the signal inputted from an input terminal are unnecessary.

[Claim 22] It is the information filtering approach according to claim 21 characterized by being the autocorrelation matrix of a vector signal when an affirmation metric signal is the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is required for information and the information of the signal into which a negative metric signal is inputted from an input terminal is unnecessary.

[Claim 23] An affirmation metric signal and a negative metric signal are matrices, respectively. The (ij) component of said matrix The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where the information in which the i-th keyword signal and the j-th keyword signal were included simultaneously was needed, The information filtering approach according to claim 21 characterized by calculating said i-th keyword signal and said j-th keyword signal from the frequency where information included simultaneously was made unnecessary.

[Claim 24] The (ij) component of a matrix is the information filtering approach according to claim 23 characterized by being the signal by which the difference from the probability distribution which shows whether the information in which the probability distribution which shows whether information is required or it is unnecessary, the i-th keyword signal, and the j-th keyword signal were included simultaneously is required, or it is unnecessary is evaluated quantitatively.

[Claim 25] The dictionary adaptation approach which is an approach of building the dictionary for evaluating the need for informational, and is characterized by updating the content of the dictionary so that it may be suitable, in order that information may evaluate the need for informational using the signal which shows whether it is the need, and one or more keyword signals attached to said information.

[Claim 26] The renewal of the content of the dictionary is the dictionary adaptation approach according to claim 25 characterized by being carried out using the keyword cost signal calculated from the frequency of the needed information, the frequency of the information made unnecessary, the frequency where information including said keyword signal was needed about each keyword signal, and the frequency where information including said keyword signal was made unnecessary.

[Claim 27] The keyword cost signal of each keyword signal is the dictionary adaptation approach according to claim 26 characterized by being the signal by which the difference between the probability distribution which shows whether information is required or it is unnecessary, and the probability distribution which shows whether

information including said keyword signal is required or it is unnecessary is evaluated quantitatively.

[Claim 28] The keyword cost signal of each keyword signal is the dictionary adaptation approach according to claim 27 that it is a signal about such a big value that the difference between the probability distribution which shows whether information is required or it is unnecessary, and the probability distribution which shows whether information including said keyword signal is required or it is unnecessary is great, and said keyword cost signal is characterized by leaving a big keyword signal and canceling a small keyword signal.

[Claim 29] Database reconstruction equipment which is database reconstruction equipment which reconstructs a database and is characterized by using the information filter equipment of a publication for claim 1 **** 9, 15, and 16 or 18.

[Claim 30] The database reconstruction approach which is the database reconstruction approach which reconstructs a database and is characterized by using the information filtering approach of a publication for claim 19 **** 24.

[Claim 31] Retrieval-by-keyword type generation equipment characterized by taking out predetermined information from an electron, the information storage medium through light, or an information communication network, having a means to show information, and the input terminal into which said information inputs whether it is the need, and generating a retrieval-by-keyword type based on the input from said input terminal.

[Claim 32] Sequencing of informational presentation is retrieval-by-keyword type generation equipment according to claim 31 which calculates at least one metric signal from the vector signal which changed the keyword group signal which consists of two or more keyword signals using a dictionary, and the input that information is as it is the need, and generates a retrieval-by-keyword type using the metric signal.

[Claim 33] A metric signal is retrieval-by-keyword type generation equipment according to claim 32 characterized by being the negative metric signal which consists of information when the affirmation metric signal which consists of information when the signal inputted from an input terminal is required, and the signal inputted from an input terminal are unnecessary.

[Claim 34] It is retrieval-by-keyword type generation equipment according to claim 33 characterized by being the autocorrelation matrix of a vector signal when an affirmation metric signal is the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is required for information and a negative metric signal has the unnecessary signal inputted from an input terminal.

[Claim 35] An affirmation metric signal and a negative metric signal are matrices, respectively. The (ij) component of said matrix The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where the information which includes simultaneously the i-th keyword signal and the

j-th keyword signal was needed, Retrieval-by-keyword type generation equipment according to claim 33 characterized by calculating said i-th keyword signal and said j-th keyword signal from the frequency where information included simultaneously was made unnecessary.

[Claim 36] The (ij) component of a matrix is retrieval-by-keyword type generation equipment according to claim 35 characterized by being the signal by which the difference from the probability distribution which shows whether the information which includes simultaneously the probability distribution which shows whether information is required or it is unnecessary, the i-th keyword signal, and the j-th keyword signal is required, or it is unnecessary is evaluated quantitatively.

[Claim 37] claims 31-36 characterized by drawing up a dictionary by claim 10 **** 15 or adaptation dictionary equipment according to claim 17 -- retrieval-by-keyword type generation equipment given in either.

[Claim 38] The retrieval-by-keyword type generation method characterized by taking out predetermined information from an electron, the information storage medium through light, or an information communication network, having a means to show information, and the input terminal into which said information inputs whether it is the need, and generating a retrieval-by-keyword type based on the input from said input terminal.

[Claim 39] Sequencing of informational presentation is a retrieval-by-keyword type generation method according to claim 38 which calculates at least one metric signal from the vector signal which changed the keyword group signal which consists of two or more keyword signals using a dictionary, and the input that information is as it is the need, and generates a retrieval-by-keyword type using the metric signal.

[Claim 40] A metric signal is a retrieval-by-keyword type generation method according to claim 39 characterized by being the negative metric signal which consists of information when the affirmation metric signal which consists of information when the signal inputted from an input terminal is required for information, and the signal inputted from an input terminal are unnecessary.

[Claim 41] It is the retrieval-by-keyword type generation method according to claim 40 characterized by being the autocorrelation matrix of a vector signal when an affirmation metric signal is the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is required and a negative metric signal has the unnecessary signal inputted from an input terminal.

[Claim 42] An affirmation metric signal and a negative metric signal are matrices, respectively. The (ij) component of said matrix The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where the information which includes simultaneously the i-th keyword signal and the j-th keyword signal was needed, The retrieval-by-keyword type generation method according to claim 40 characterized by being calculated from the frequency where

information which includes simultaneously said i-th keyword signal and said j-th keyword signal was made unnecessary.

[Claim 43] The (ij) component of a matrix is a retrieval-by-keyword type generation method according to claim 42 characterized by being the signal by which the difference from the probability distribution which shows whether the information which includes simultaneously the probability distribution which shows whether information is required or it is unnecessary, the i-th keyword signal, and the j-th keyword signal is required, or it is unnecessary is evaluated quantitatively.

[Claim 44] claim 31 **** 36 characterized by a dictionary being what created by the dictionary adaptation approach of a publication by either of claim 25 **** 28 -- a retrieval-by-keyword type generation method given in either.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the information filter equipment and the information filtering approach of it being [ required information ] ejection-easy and carrying out it from the storage through an electron or light, or an information communication network.

[0002]

[Description of the Prior Art] In recent years, the implementation is strongly desired as a technique corresponding to [ in connection with progress of the infrastructure of an information communication link ] remarkable buildup of large-scale-izing of an information communication network, and traffic in information filter equipment. For this background, the amount of information which an individual can access may exceed today to the amount of information which an individual can process. for this reason, it often happens that the information which thinks the need is buried into the information on a large quantity.

[0003] As a conventional technique relevant to information filter equipment, the keyword logical expression used for patent retrieval etc. can be held. That is, optical filtering of hundreds of thousands to millions of [ as many as ] patent information is carried out with keyword logical expression.

[0004]

[Problem(s) to be Solved by the Invention] However, in the conventional retrieval using keyword logical expression, since a user needs to set up the logical expression about a keyword with a sufficient precision, if the peculiarity (for example, the keyword of the data concerned is determine as the radical of what kind of conditions)

of a data constellation or the structure (for example, ****** [ that a keyword is a system with a thesaurus system ] etc.) of a system where the user is file cannot fully be know, good retrieval cannot be perform. For this reason, the beginner had the technical problem that information filtering with a high precision could not be performed.

[0005] Moreover, although the result which carried out information filtering also only has assessment of suiting the logical expression about a keyword and has agreed by the keyword by chance, the content is not easy for that for which it is asking to be a different case, or to take out the high information on whenever [ need ] from many retrieval results sequentially from the result for a user.

[0006] This invention solves the above-mentioned conventional technical problem, and it aims at offering the information filter equipment which a beginner can also do information filtering with a high precision, and is easy to take out the high information on need for a user.

[0007]

[Means for Solving the Problem] In order to attain this object the information filter equipment of this invention The vector generation section which changes into a vector two or more keywords assigned by information, The score count section which calculates a score using the matrix expressing whether said vector and user needed what kind of information, and it was presupposed that it is unnecessary, The information filtering unit which consists of the need [ of calculating need and dependability from said score ] count section, and an unread data write-in control section which puts in order and changes information into descending of said need, It has the configuration containing the study unit which corrects the matrix the information which presented information and was shown has in score count, and is in descending of need from the interface unit which can input assessment of the need or the user whether to be unnecessary, and assessment of a user and said two or more keywords.

[0008]

[Embodiment of the Invention] By this configuration, two or more keywords can be changed into the vectorial representation which can define distance from the notation which cannot perform the definition of distance using metric one reflecting whenever [ need / for a user ], and can quantify whenever [ need / for a user ], and a user can acquire information now sequentially from the high information on need.

[0009] A means for invention of this invention according to claim 1 to take out predetermined information from an electron, the information storage medium through light, or an information communication network, and to show information, Said information has the input terminal which inputs whether it is the need, and considers as the information filter equipment characterized by changing the method of sequencing informational presentation using the input from said input terminal at least.

Information arranges using the input which shows assessment of being the need from a user, **** is performed, and it has an operation of showing a user information at the high order of need.

[0010] Invention of this invention according to claim 2 sequencing of informational presentation The vector signal which changed the keyword group signal which consists of two or more keyword signals using a dictionary, A score signal is calculated from at least one metric signal calculated from the input that information is as it is the need. It considers as the information filter equipment according to claim 1 which determines the sequence of informational presentation using the score signal. two or more keywords to which informational sequencing was attached by information -- a vector -- changing -- vector and metric one of the to a score -- calculating -- the score -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0011] Invention of this invention according to claim 3 a metric signal The affirmation metric signal which is a signal calculated from the signal which shows [ the need of being inputted from the information and the input terminal which were shown, or ] whether it is unnecessary, and consists of information when the signal inputted from said input terminal is required, It considers as the information filter equipment according to claim 2 characterized by being the negative metric signal which consists of information when the signal inputted from said input terminal is unnecessary. what is calculated from the information for which the user needed metric one, and using two, although calculated from the information made unnecessary -- a score with a high precision -- calculable -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0012] Invention of this invention according to claim 4 an affirmation metric signal It is the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is required. A negative metric signal It considers as the information filter equipment according to claim 3 characterized by being the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is unnecessary. this -- easy count -- metric one -- calculable -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0013] An affirmation metric signal and the negative metric signal of invention of this invention according to claim 5 are matrices, respectively. The (ij) component of said matrix The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where the information in which the i-th keyword signal and the j-th keyword signal were included simultaneously was needed, It considers as the information filter equipment according to claim 3 characterized by calculating said i-th keyword signal and said j-th keyword signal from the frequency where information included simultaneously was made unnecessary. precision -- high -- score count -- it can do -- information -- order required for a user -- precision --

it has an operation of arranging highly and changing.

[0014] Invention of this invention according to claim 6 the (ij) component of a matrix The probability distribution which shows whether information is required or it is unnecessary, By considering as the information filter equipment according to claim 5 characterized by being the signal by which the difference from the probability distribution which shows whether the information in which the i-th keyword signal and the j-th keyword signal were included simultaneously is required, or it is unnecessary is evaluated quantitatively, and evaluating the difference in probability distribution precision -- high -- score count -- it can do -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0015] A means by which invention of this invention according to claim 7 changes two or more keyword signals into a vector signal at the sequencing sake of informational presentation, The score count section which calculates an affirmation score signal and a negative score signal using the affirmation metric signal which consists of required information, the negative metric signal which consists of unnecessary information, and said vector signal, The judgment parameter signal which is the multiplier of the straight line which divides into required information and unnecessary information distribution of the point of the 2-dimensional flat surface which consists of said affirmation score signal and said negative score signal, It has the need [ of calculating a need signal and a dependability signal from said negative score signal in said affirmation score signal list ] count section. It considers as the information filter equipment of any of claim 1 **** 6 characterized by deciding the sequence of informational presentation with the magnitude of said need signal, or a publication. combining two score signals the optimal -- a need signal with a high precision -- calculable -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0016] invention of this invention according to claim 8 combines the score signal of two information filter equipments according to claim 7 characterized by calculating a judgment parameter signal from hysteresis with the input that the information and said information on past are as it is the need the optimal -- a need signal with a high precision -- calculable -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing .

[0017] Invention of this invention according to claim 9 so that the information needed from the information which flows one after another like electronic news may be shown preferentially The unread data storage section which memorizes unread information, and the unread data write-in control section which arranges said unread information in order of the magnitude of a need signal, and is written in said unread data storage section, Claim 1 **** 8 which has the unread data output control section which presents said unread data in order is information filter equipment of a publication either, and it has an operation of showing preferentially from information required for a

user.

[0018] Invention of this invention according to claim 10 is dictionary equipment for evaluating the need for informational, in order that information may evaluate the need for informational using the signal which shows whether it is the need, and one or more keyword signals which were attached to said information, as suitable, it is adaptation dictionary equipment characterize by to update the content of the dictionary, and in order to take out the information which a user needs, it has an operation that an effective dictionary is constitute accommodative.

[0019] Invention of this invention according to claim 11 the renewal of the content of the dictionary The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where information including said keyword signal was needed about each keyword signal, It is adaptation dictionary equipment according to claim 10 characterized by performing information including said keyword signal using the keyword cost signal calculated from the frequency made unnecessary, and in order to take out the information which a user needs, an effective dictionary has an operation of being constituted accommodative.

[0020] Invention of this invention according to claim 12 the keyword cost signal of each keyword signal It is adaptation dictionary equipment according to claim 11 characterized by being the signal by which the difference between the probability distribution which shows whether information is required or it is unnecessary, and the probability distribution which shows whether information including said keyword signal is required or it is unnecessary is evaluated quantitatively. In order to take out the information which a user needs, an effective dictionary has an operation of being constituted accommodative.

[0021] Invention of this invention according to claim 13 the keyword cost signal of each keyword signal It is the signal of such a big value that the difference between the probability distribution which shows whether information is required or it is unnecessary, and the probability distribution which shows whether the information in which said keyword signal was included is required, or it is unnecessary is great. It leaves a keyword signal with said big keyword cost signal, it is adaptation dictionary equipment according to claim 12 characterized by canceling a small keyword signal, and in order to take out the information which a user needs, an effective dictionary has an operation of being constituted accommodative.

[0022] The count storage section which memorizes the count of total negation which shows the count to which invention of this invention according to claim 14 made unnecessary all the counts of affirmation that show the count for which the input from an input terminal needed the shown information, and said information, The adaptation dictionary storage section which memorized the count of negation which shows the count to which the count of affirmation which shows the conversion table which changes into a figure the character string which shows a keyword signal, and the

count for which said character string needed the information included as a keyword signal, and said character string made unnecessary information included as a keyword signal, The input from the input terminal that the shown information is as it is the need, the keyword signal included in said information, Claim 10 **** 13 characterized by having the dictionary study section which updates the signal memorized by said all counts of affirmation, said count of total negation, and said adaptation dictionary storage section from the signal memorized by said all counts of affirmation, said count of total negation, and said adaptation dictionary storage section is adaptation dictionary equipment of a publication either.

[0023] in order to take out the information which claim 2 **** 9 characterized by invention of this invention according to claim 15 having adaptation dictionary equipment indicated by either of claim 10 **** 14 is information filter equipment of a publication either, and a user needs, an effective dictionary constitutes accommodative -- having -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0024] either of claim 2 **** 9 characterized by a keyword signal containing a classification code, as for invention of this invention according to claim 16, or the information filter equipment of a publication given in 15 -- it is -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0025] Claim 10 **** 14 characterized by a keyword signal containing a classification code is adaptation dictionary equipment of a publication of a publication either, and invention of this invention according to claim 17 has an operation that an effective dictionary is constituted accommodative, in order to take out the information which a user needs.

[0026] in order to take out the information which is information filter equipment according to claim 16 characterized by invention of this invention according to claim 18 having adaptation dictionary equipment indicated by claim 17, and a user needs, an effective dictionary constitutes accommodative -- having -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0027] The stroke which invention of this invention according to claim 19 is the approach of taking out predetermined information from an electron, the information storage medium through light, or an information communication network, and presents information, the information filtering approach that said information is characterized by changing the method of sequencing informational presentation from the input which has like the input row which inputs whether it is the need, and can be set like said input row -- it is -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0028] Invention of this invention according to claim 20 sequencing of informational presentation The vector signal which changed the keyword group signal which consists of two or more keyword signals using a dictionary, A score signal is

calculated from at least one metric signal calculated from the input that information is as it is the need. the information filtering approach according to claim 19 of changing the method of sequencing informational presentation using the score signal -- it is -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0029] the information filtering approach according to claim 20 characterized by for invention of this invention according to claim 21 to be a negative metric signal which consists of information when a metric signal has the affirmation metric signal which consists of information when the signal inputted from an input terminal is required, and the unnecessary signal inputted from an input terminal -- it is -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0030] the information filtering approach according to claim 21 characterized by for a negative metric signal to be the autocorrelation matrix of a vector signal when it is the autocorrelation matrix of a vector signal when the signal into which an affirmation metric signal is inputted for invention of this invention according to claim 22 from an input terminal is required for information and the information of the signal inputted from an input terminal is unnecessary -- it is -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0031] An affirmation metric signal and the negative metric signal of invention of this invention according to claim 23 are matrices, respectively. The (ij) component of said matrix The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where the information in which the i-th keyword signal and the j-th keyword signal were included simultaneously was needed, the information filtering approach according to claim 21 characterized by calculating said i-th keyword signal and said j-th keyword signal from the frequency where information included simultaneously was made unnecessary -- it is -- information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0032] Invention of this invention according to claim 24 the (ij) component of a matrix The probability distribution which shows whether information is required or it is unnecessary, It is the information filtering approach according to claim 23 characterized by being the signal by which the difference from the probability distribution which shows whether the information in which the i-th keyword signal and the j-th keyword signal were included simultaneously is required, or it is unnecessary is evaluated quantitatively. information -- order required for a user -- precision -- it has an operation of arranging highly and changing.

[0033] Invention of this invention according to claim 25 is the approach of building the dictionary for evaluating the need for informational. The signal with which information shows whether it is the need, and one or more keyword signals attached to said information are used. As suitable in order to evaluate the need for informational, it is

the dictionary adaptation approach characterized by updating the content of the dictionary, and in order to take out the information which a user needs, an effective dictionary has an operation of being constituted accommodative.

[0034] Invention of this invention according to claim 26 the renewal of the content of the dictionary The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where information including said keyword signal was needed about each keyword signal, It is the dictionary adaptation approach according to claim 25 characterized by performing information including said keyword signal using the keyword cost signal calculated from the frequency made unnecessary, and in order to take out the information which a user needs, an effective dictionary has an operation of being constituted accommodative.

[0035] Invention of this invention according to claim 27 the keyword cost signal of each keyword signal It is the dictionary adaptation approach according to claim 26 characterized by being the signal by which the difference between the probability distribution which shows whether information is required or it is unnecessary, and the probability distribution which shows whether information including said keyword signal is required or it is unnecessary is evaluated quantitatively. In order to take out the information which a user needs, an effective dictionary has an operation of being constituted accommodative.

[0036] Invention of this invention according to claim 28 the keyword cost signal of each keyword signal It is a signal about such a big value that the difference between the probability distribution which shows whether information is required or it is unnecessary, and the probability distribution which shows whether information including said keyword signal is required or it is unnecessary is great. It leaves a keyword signal with said big keyword cost signal, it is the dictionary adaptation approach according to claim 27 characterized by canceling a small keyword signal, and in order to take out the information which a user needs, an effective dictionary has an operation of being constituted accommodative.

[0037] Invention of this invention according to claim 29 is database reconstruction equipment which reconstructs a database, is database reconstruction equipment characterized by using the information filter equipment of a publication for claim 1 **** 9, 15, and 16 or 18, and has an operation of being easy to take out information required for a user.

[0038] Invention of this invention according to claim 30 is the database reconstruction approach which reconstructs a database, is the database reconstruction approach characterized by using the information filtering approach of a publication for claim 19 **** 24, and has an operation of being easy to take out information required for a user.

[0039] A means for invention of this invention according to claim 31 to take out predetermined information from an electron, the information storage medium through light, or an information communication network, and to show information, It is

retrieval-by-keyword type generation equipment characterized by for said information having the input terminal which inputs whether it is the need, and generating a retrieval-by-keyword type based on the input from said input terminal. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0040] Invention of this invention according to claim 32 sequencing of informational presentation The vector signal which changed the keyword group signal which consists of two or more keyword signals using a dictionary, At least one metric signal is calculated from the input that information is as it is the need. It is retrieval-by-keyword type generation equipment according to claim 31 which generates a retrieval-by-keyword type using the metric signal, and a user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0041] Invention of this invention according to claim 33 a metric signal The affirmation metric signal which consists of information when the signal inputted from an input terminal is required, It is retrieval-by-keyword type generation equipment according to claim 32 characterized by being the negative metric signal which consists of information when the signal inputted from an input terminal is unnecessary. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0042] Invention of this invention according to claim 34 an affirmation metric signal It is the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is required for information. A negative metric signal It is retrieval-by-keyword type generation equipment according to claim 33 characterized by being the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is unnecessary. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0043] An affirmation metric signal and the negative metric signal of invention of this invention according to claim 35 are matrices, respectively. The (ij) component of said matrix The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where the information which includes simultaneously the i-th keyword signal and the j-th keyword signal was needed, It is retrieval-by-keyword type generation equipment according to claim 33 characterized by calculating said i-th keyword signal and said j-th keyword signal from the frequency where information included simultaneously was made unnecessary. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0044] Invention of this invention according to claim 36 the (ij) component of a matrix The probability distribution which shows whether information is required or it is

unnecessary, It is retrieval-by-keyword type generation equipment according to claim 35 characterized by being the signal by which the difference from the probability distribution which shows whether the information which includes simultaneously the i-th keyword signal and the j-th keyword signal is required, or it is unnecessary is evaluated quantitatively. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0045] claims 31-36 to which invention of this invention according to claim 37 is characterized by drawing up a dictionary by claim 10 **** 15 or adaptation dictionary equipment according to claim 17 -- it is retrieval-by-keyword type generation equipment given in either, and a user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0046] A means for invention of this invention according to claim 38 to take out predetermined information from an electron, the information storage medium through light, or an information communication network, and to show information, It is the retrieval-by-keyword type generation method characterized by for said information having the input terminal which inputs whether it is the need, and generating a retrieval-by-keyword type based on the input from said input terminal. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0047] Invention of this invention according to claim 39 sequencing of informational presentation The vector signal which changed the keyword group signal which consists of two or more keyword signals using a dictionary, At least one metric signal is calculated from the input that information is as it is the need. It is the retrieval-by-keyword type generation method according to claim 38 which generates a retrieval-by-keyword type using the metric signal, and a user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0048] Invention of this invention according to claim 40 a metric signal The affirmation metric signal which consists of information when the signal inputted from an input terminal is required for information, It is the retrieval-by-keyword type generation method according to claim 39 characterized by being the negative metric signal which consists of information when the signal inputted from an input terminal is unnecessary. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0049] It is the retrieval-by-keyword type generation method according to claim 40 characterized by being the autocorrelation matrix of a vector signal when invention of this invention according to claim 41 is the autocorrelation matrix of a vector signal when the signal inputted from an input terminal is required for an affirmation metric

signal and a negative metric signal has the unnecessary signal inputted from an input terminal.

[0050] An affirmation metric signal and the negative metric signal of invention of this invention according to claim 42 are matrices, respectively. The (ij) component of said matrix The frequency of the needed information, the frequency of the information made unnecessary, and the frequency where the information which includes simultaneously the i-th keyword signal and the j-th keyword signal was needed, It is the retrieval-by-keyword type generation method according to claim 40 characterized by being calculated from the frequency where information which includes simultaneously said i-th keyword signal and said j-th keyword signal was made unnecessary. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0051] Invention of this invention according to claim 43 the (ij) component of a matrix The probability distribution which shows whether information is required or it is unnecessary, It is the retrieval-by-keyword type generation method according to claim 42 characterized by being the signal by which the difference from the probability distribution which shows whether the information which includes simultaneously the i-th keyword signal and the j-th keyword signal is required, or it is unnecessary is evaluated quantitatively. A user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0052] claim 31 **** 36 characterized by invention of this invention according to claim 44 being that by which a dictionary is drawn up by the dictionary adaptation approach given in either of claim 25 **** 28 -- it is a retrieval-by-keyword type generation method given in either, and a user has an operation that the retrieval-by-keyword type which retrieves required information can be obtained, by inputting informational important point needlessness.

[0053] Hereafter, the gestalt of operation of this invention is explained using drawing 19 from drawing 1 .

(Gestalt 1 of operation) The gestalt of operation of the first of this invention is explained hereafter, referring to a drawing. Drawing 1 is the block diagram showing the configuration of the information filter equipment of the gestalt 1 of operation of this invention, and drawing 2 is the block diagram packed into the functional unit, in order to make the configuration and actuation intelligible.

[0054] First, the fundamental concept of this invention is explained using drawing 2 . Two or more storage sections 2, 5, 6, and 8, as for the information filter equipment of the fundamental concept of this invention, the user remembered the records about the hysteresis what kind of "information" to have needed in the past to be, The information filtering unit 50 which filters "information", The unread data storage

section 10 which accumulates unread "information" (information which the user has not read yet) actually filtered with the information filtering unit 50, a user -- being concerned -- unread -- it consists of interface units 51, such as a display which could be made to carry out visible [ of the "information" ], and a study unit 52 which performs study about the hysteresis what kind of "information" the user needed.

[0055] Hereafter, actuation of the above-mentioned configuration is explained. In addition, the following explanation explains the hysteresis what kind of "information" the user already needed in the past, as what [ finishing / a thing / study ]. Moreover, one or more keywords corresponding to the "information" concerned shall be given to what is only called "information" below. The keyword may be a part or the whole of each word which constitutes the "information" concerned, and since the "information" concerned is represented, you may give specially.

[0056] First, if new "information" is inputted into the information filtering unit 50, the information filtering unit 50 will read record what kind of "information" the user needed in the past from the storage sections 2, 5, 6, and 8, and will evaluate the need for said new "information" quantitatively as a need signal.

[0057] next, the evaluated new "information" has a need signal unread to descending from the past in the unread data storage section 10 -- said inputted "information" is written in the sequence concerned so that it may stand in a line including "information."

[0058] and when the user wished, in the interface unit 51, said new "information" was included in the user at descending of a need signal -- unread -- even one presents "information" (it displays on a display). <BR> [0059] under the present circumstances, it was alike and said new "information" which the user was shown was included -- unread -- when a user inputs the educator signal with which every ** of "information" shows [ the need or ] for a user whether it is unnecessary through an interface unit 51, in an interface unit 51, reception, the "information" concerned, and its educator signal are sent for the educator signal concerned to the study unit 52. In addition, the input of the educator signal by this user is carried out in order to heighten the machine learning of the study unit 52 more, and if the machine learning (machine learning of the hysteresis what kind of "information" the user needed in the past) of the study unit 52 is already high fully, it is not necessary to perform it.

[0060] Next, in the study unit 52, the content of hysteresis of the storage sections 2, 5, 6, and 8 is rewritten using said the shown "information" and its educator signal.

[0061] As mentioned above, the information filter equipment of this invention is adapted for a user through higher study, and can present preferentially the "information" which a user searches for. moreover, in the initial state which is not learning with the natural thing Although the input of the educator signal by the user who mentioned above all the new "information" inputted whenever the user received presentation by the interface unit 51 is required since a user does not understand

what kind of "information" is needed in the study unit 52 It is adapted for a user soon through the study carried out at any time, and the "information" which a user searches for can be shown preferentially.

[0062] in addition, showing preferentially the "information" which a user searches for If the more concrete example of an activity describes, even if it will search the population A of a a certain "information" database with a specific keyword and will obtain the "informational" retrieval set B Even if not all the "information" on the retrieval set B concerned is necessarily required for a user and informational [ "informational" / all ] is required for a user, the need ranking is premised on naturally existing. Therefore, it means showing preferentially the "information" which a user asks for showing a user in order by the interface unit 51 according to needlessness or its need ranking sequentially from the need.

[0063] Now, in this invention, an important point is how to calculate a need signal (educator signal that ** "information" was required).

[0064] With the gestalt of desirable operation, a need signal is notionally calculated as following amounts.

[0065] As stated the top, the case where the keyword is attached to the inputted "information" is considered. The keyword set C which is attached to the "information" made unnecessary with the keyword set A considering one user attached to the "information" which the user needs by high frequency or a high probability still better in all with the keyword set B attached by high frequency or a high probability, or is not attached to it can be considered.

[0066] Therefore, a value 0 is assigned to the keyword which belongs a negative value to said keyword set C at the keyword which belongs a positive-number value to said keyword set B at the keyword belonging to said keyword set A, respectively.

[0067] And it judges to which keyword group of said keyword sets A, B, and C each belongs about one or more keywords currently attached to the "information" newly inputted, and it constitutes so that said assigned value may be integrated.

[0068] If constituted, thus, two or more keywords attached to said "information" newly inputted A forward big value is shown to the "information" (high information on possibility that a user needs) in which many keywords belonging to the keyword set A were contained. It is convertible for the numeric value which shows a negative big value to the "information" (high information on possibility of supposing that a user is unnecessary), to which many keywords belonging to the keyword set B are attached.

[0069] In this way, it can predict to the need for a user using said numeric value. assignment of the value from the need for the user about the "information" shown in this invention, and its "information" / unnecessary assessment to a keyword (keyword coincidence is included) -- automatic -- carrying out -- count of a need signal with a high precision -- realizing -- precision -- it has realized putting in order and changing "information" into the high, high order of need.

[0070] Therefore, with the gestalt 1 of operation, two or more keywords attached to "information" were changed into one vector, and the autocorrelation matrix of said vector is independently calculated about the case where it is presupposed with the case where a user needs that it is unnecessary. the autocorrelation matrix MY made from the keyword currently attached to the "information" which the user answered the need -- using -- the die length SY of Vector V

$$SY = \sum_{i} \sum_{j} Mij \cdot Vi \cdot Vj$$

It calculates.

[0071] In addition, a "negative metric signal", a call, and die length SY are called an affirmation signal for the autocorrelation matrix MN made from the keyword which attached the autocorrelation matrix MY made from the keyword currently hereafter attached to the "information" which answered it as the need to the information which answered it as an "affirmation metric signal" and needlessness.

[0072] If many keywords well contained in the "information" which a user needs in two or more keywords which became the origin of Vector V are contained, since die length SY takes a forward big value, and it takes the value near 0 when that is not right, when calculating a need signal, it is effective. [ of this die length SY ]

[0073] This invention has realized count of a need signal with a high precision for the device in piles further so that drawing 1 may be used below and detail explanation may be given.

[0074] The functional unit is explained using drawing 1 about the block equivalent to the information filtering unit 50 shown in drawing 2 , and the block equivalent to the study unit 52 shown in drawing 2 .

[0075] First, the configuration of the block equivalent to the information filtering unit 50 is explained.

[0076] two or more keywords (in accuracy) by which the information filtering unit 50 was attached to each "information" The part which calculates the affirmation signal in which a user expresses the score of the kind which has used the affirmation metric signal and negative metric signal which expressed the need / hysteresis of having presupposed that it is unnecessary for what kind of "information" as the part which changes the character string containing a classification code into a vector, and a negative signal, It consists of a part which calculates the need [ of often reflecting the need for "informational" from this affirmation signal and a negative signal ] signal, and a part which puts in order and changes information into descending of this need signal. Hereafter, the configuration of the block equivalent to the information filtering unit 50 is based and explained to drawing 1 .

[0077] In drawing 1 , the vector generation section which changes into a vector two or more character strings, such as a keyword by which 1 was attached to "information", and 2 are the sign dictionary storage sections which memorized the sign dictionary signal for changing two or more character strings, such as a keyword, into a vector. the conversion table which changes into Figure C the character strings W, such as a keyword which attaches to "information" the sign dictionary signal memorized by this sign dictionary storage section 2, -- a nofDCK piece -- the code book [0078] which it has

[Equation 1]

$$DCK\ [1] = (W\ [1], C\ [1])$$

$$\vdots$$

$$DCK\ [nofDCK] = (W\ [nofDCK], C\ [nofDCK])$$

[0079] It comes out, and it is, and the vector generation section 1 receives keyword group signal Ks= (K [1], ..., K [nofKs]) which consists of a number signal nofKs of keywords, and a keyword signal of a nofKs individual, and changes it into the vector signal V using the keyword group signal Ks and said sign dictionary signal DCK. 3 is the score count section and changes the "information" which the user was shown into the die length of two vector signals V, the affirmation signal SY, and the negative signal SN which were changed in the vector generation section 1 using the affirmation metric signal MY calculated from the need / result it was estimated that was unnecessary, and the negative metric signal MN. The affirmation metric storage section which memorizes said affirmation metric signal MY whose 5 is a matrix (nofDCKxnofDCK), and 6 are the negative metric storage sections which memorize said negative metric signal MN which is a matrix (nofDCKxnofDCK). They are the judgment parameter storage section 8 remembers the judgment parameter signal C to be, and the need [ of 7 receiving said affirmation signal SY and said negative signal SN, reading the judgment parameter signal C from said distinction parameter storage section 8, and calculating the need signal N and the dependability signal R ] count section. The **** data write-in control section which writes 9 in the unread data-storage section 10 which mentions later the information data D, and the number signal nofKs of keywords and the keyword group signal Ks which is the "informational" text, a need signal N, and a dependability signal R according to a predetermined procedure, and 10 are unread data [0080] of a maximum nofURD individual which consist of the information data D which are the text of the above "information", said

number signal nofKs of keywords and said keyword group signal Ks, said need signal N, and said dependability signal R

[Equation 2]

$$URD\ [1] = (N\ [1], R\ [1], nofKs\ [1], Ks\ [1], D\ [1])$$

$$\vdots$$

$$URD\ [nofURD] = (N\ [nofURD], R\ [nofURD], nofKs\ [nofURD], Ks\ [nofURD], D\ [nofURD])$$

[0081] The unread data storage section to memorize and 13 are the educator data signal of a maximum nofTD individual.

[0082]

[Equation 3]

$$TD\ [1] = (T\ [1], TnofK\ [1], TKs\ [1])$$

$$\vdots$$

$$TD\ [nofTD] = (T\ [nofTD], TnofKs\ [nofTD], TKs\ [nofTD])$$

[0083] It is the educator data storage section to memorize. Next, the configuration of a block of the interface unit 51 shown by drawing 2 is explained.

[0084] In drawing 1 , 11 receives a control signal DO and reads the unread data signal URD [1] from the unread data storage section 10. Output a status signal DD and the educator signal T with which the status signal DD shows for a user whether it is the need is received from a user. the unread data output control section which writes the number signal nofKs of keywords [1] and the keyword group signal Ks [1] of said educator signal T and said unread data signal URD [1] in the educator data storage section 13 according to a predetermined procedure -- such -- **.

[0085] Next, the configuration of the block equivalent to the study unit 52 shown by drawing 2 is explained. The study unit 52 consists of a part which performs metric study which corrects affirmation/negation metric signal using the educator signal T inputted by the user, and a part which corrects the parameter for calculating a need signal from affirmation/negation signal, and a judgment parameter signal, and each part is controlled by the learning-control section.

[0086] The configuration of the part which performs metric study shown in drawing 1 is as follows. In drawing 1 , 19 is the metric study section which corrects the negative metric signal MN memorized by the affirmation metric signal MY memorized by the

affirmation metric storage section 5 and said negative metric storage section 6. This metric study section 19 reads said educator data TD from the educator data storage section 13, changes into a vector two or more keywords in the vector generation section 20 for study which is the same function as the vector generation section 1 of the study unit 50, is calculating an autocorrelation matrix and corrects affirmation/negation metric signal.

[0087] The configuration of the part which learns a judgment parameter signal is as follows. In drawing 1 , 22 is the score count section for study which consists of the affirmation signal count section 221 for study, and the negative signal count section 222 for study. In this score count section for study, they are the affirmation signal count section for study which 221 receives the vector signal for study from the vector generation section 20 for study, and calculates the affirmation signal LSY for study, and the negative signal count section for study which 222 receives the vector signal for study from the vector generation section 20 for study, and calculates the negative signal LSN for study. The judgment side study section in which 21 rewrites the judgment parameter signal of the judgment parameter storage section 8 by the predetermined approach in response to the judgment parameter learning-control signal PLC from the learning-control section 14, and 14 are the learning-control section which controls in response to the study start signal LS in switches 16, 17, and 18, the metric study section 19, the vector generation section 20 for study, the score count section 22 for study, the negative signal count section 23 for study, and the judgment side study section 21.

[0088] About the information filter equipment constituted as mentioned above, the actuation is explained using a drawing for every unit.

[0089] An example of the desirable initial state of information filter equipment is in the condition which set altogether to -1 educator signal [ of the minimum value Vmin and the educator data TD of the educator data storage section 13 [j] with which the hardware which uses all the need signals N [i] (i= 1, ..., nofURD) of the unread data URD [i] of a zero matrix (nofDCKxnofDCK) and the unread data storage section 10 can express the affirmation metric signal MY and the negative metric signal MN ] T [j].

[0090] First, actuation of the information filtering unit 50 is explained. First, the information data D are inputted from the information data input terminal 100, the number signal nofKs of keywords showing the number of the keyword attached to information data from the number signal input terminal 101 of keywords is inputted, and keyword group signal Ks= (K [1], K [2], ..., K [nofKs]) which is two or more keywords from the keyword signal input terminal 102 is inputted.

[0091] The keyword group signal Ks is changed into the vector signal V from the meeting of a character string by the vector generation section 1. By this conversion, the similarity of a keyword group signal can be calculated now as a distance of a vector. It explains referring to the flow chart which shows actuation of the vector

generation section 1 to drawing 3 . First, if the number signal nofKs of keywords and the keyword group signal Ks are received ( drawing 3 step (**)), internal vector signal V= (V [1], V [2], ..., V [nofDic]) will be set to (0, 0, ..., 0), and the keyword counter signal i will be set to 1 (this drawing step (**), (Ha)). Next, after carrying out zero set of dictionary counter signals j, only 1 increases the dictionary counter signal j (this drawing step (**)).

[0092] Next, the sign dictionary signal DCK [j] which consists of a keyword specified by the dictionary counter j and a figure is read from the dictionary storage section 2 which has the sign dictionary signal DCK of a nofDCK individual to the interior, and character string partial [ of the sign dictionary signal DCK ] W [j] and i-th keyword signal K [i] is compared (this drawing step (**)). When both are not equal, only 1 increases the dictionary counter j (this drawing step (**)). Processing of the drawing 3 step (**) - (**) is repeated until it becomes equal to the number nofDiC of the sign dictionary signal with which both were in agreement with the signal or the value of the dictionary counter j was stored in the dictionary storage section 2 (this drawing step (**)).

[0093] If W [j] equal to keyword signal K [i] is found, j-th component V [j] of a vector signal will be set to 1 (this drawing step (**)), and only 1 will increase the keyword counter signal i (this drawing step (Li)). Hereafter, same processing is performed until the keyword counter signal i becomes larger than the number signal nofKs of keywords (this drawing step (**)).

[0094] In this way, in the vector generation section 1, the keyword group signal Ks which is the aggregate of the keyword signal which consists of a character string signal is changed into the vector signal V with the component of the nofDCK individual coded by 0 and 1.

[0095] Next, the affirmation signal count section 31 calculates the affirmation signal SY used as a big value, when many keywords contained in the information which the user needed for the keyword group signal Ks in the past are contained. For this object, the affirmation signal count section 31 reads the affirmation metric signal MY from the affirmation metric storage section 5 in response to said vector signal V, and it is the affirmation signal SY [0096]

[Equation 4]

$$SY = \sum_{i=0}^{nofDiC-1} \sum_{j=0}^{nofDiC-1} MY[i][j] \cdot V[i] \cdot V[j]$$

[0097] It calculates. The negative signal count section 32 calculates the negative signal SN used as a big value, when many keywords contained in the information made unnecessary [ a user ] in the past are contained in the keyword group signal Ks. For

this object, the negative signal count section 32 reads the negative metric signal MN from the negative metric storage section 6, and it is the negative signal SN [0098] [Equation 5]

$$SN = \sum_{i=0}^{nofDiC-1} \sum_{j=0}^{nofDiC-1} MN[i][j] \cdot V[i] \cdot V[j]$$

[0099] It calculates. It is decided based on a response of the keyword group signal Ks and a user that the affirmation metric signal MY and the negative metric signal MN are mentioned later. The information data D can be made to correspond in this invention, using the affirmation signal SY and the negative signal SN which were calculated in this way, to one on the two-dimensional space which took the affirmation signal SY along the axis of ordinate, and took the negative signal SN along the axis of abscissa, as shown in drawing 9 . That (it displays by O) for which a user needs distribution of the information data D in this two-dimensional space is mainly distributed over the upper left section, and what is made unnecessary [ a user ] (it displays by x) mainly comes to be distributed over the lower right section. Therefore, a user can separate the need, the ****** data D, and the unnecessary information data D by defining a suitable coefficient C, as shown in drawing 10 .

[0100] Furthermore, the need [ of being calculated using this coefficient C described below ] signal N serves as as big a value as the information data D predicted that need is high, so that it is in the upper left in above-mentioned two-dimensional space. Therefore, if the information data D are put in order and shown to descending of the need signal N, a user can get required information efficiently. The dependability signal R of the direction which intersects perpendicularly with the need signal N is a signal which shows roughly what keyword signal was included in the dictionary among the keywords contained in the keyword group signal Ks. Therefore, the magnitude of this dependability signal R shows which the need signal N which the information filter calculated can trust.

[0101] Next, the need count section 7 receives said affirmation signal SY outputted from said affirmation signal count section 31, and said negative signal SN outputted from said negative signal count section 32. A large number [ the keyword which read the judgment parameter signal C from the judgment parameter storage section 8, and was attached to the information which was the past need ] When there is almost no keyword currently attached to the unnecessary information, the need [ of becoming a big value ] signal N is calculated with N=SY-C-SN, and the dependability signal R is calculated with R=C-SY+SN.

[0102] It explains referring to the flow chart which showed actuation of the unread data write-in control section 9 to drawing 4 . First, it receives from each input terminal

with said information data D, and said number signal nofKs of keywords and said keyword group signal Ks, said need signal N and said dependability signal R are received from the need count section 7, and the unread data-processing signal WI outputted from the unread data-division directions terminal 110 is changed into 1 from 0 ( drawing 4 step (**)). Next, it is referred to as i= 1 (this drawing step (**)), and the need signal N [i] (i= 1, ..., nofURD) of the unread data URD [i] memorized by the unread data storage section 10 is read one by one. As compared with said need signal N (this drawing step (Ha)), the number i1 of the first unread data with which said need signal N becomes larger than the need signal N [i] of the unread data URD [i] (N>=N [i]) is detected (this drawing step (**) (**)).

[0103] Unread data 1st after i URD[i+1] =URD [i] It replaces with i=i1, ..., nofURD (this drawing step (**) - (Li)). Then, it is N about the i1 position unread data URD [i1] [i1]. = NR [i1] = RnofKs [i1] = nofKsKs [i1] = KsD [i1] It replaces by =D, said need signal N, etc. (this drawing step (**)). After this replacement is completed, the unread data-division indication signal WI outputted from the unread data-division directions terminal 110 is returned to 0 (this drawing step (**)), and processing is ended.

[0104] Next, the unread data UDR are read and the interface unit 51 which adds a user's response (educator signal T) and builds educator data signal TD is explained. It explains referring to the flow chart which showed actuation of the interface unit 51 to drawing 5 .

[0105] From the data read-out start signal input terminal 103, the data read-out start signal DO is inputted ( drawing 5 step (**)). The unread data output control section 11 reads the 1st unread data URD [1] from said unread data storage section 10 (this drawing step (**)), and in being larger than the minimum value Vmin, the need signal N of unread data [1] outputs to the data display terminal 104 by making the information signal D [1] of the unread data signal URD [1] into the display information signal DD, and stands by (this drawing step (Ha), (**)). In being equal to the minimum value Vmin, the need signal N of unread data [1] makes the display information signal DD "with no data", outputs to the data display terminal 104, and stands by (this drawing step (**)).

[0106] A user (not shown) looks at the display information signal DD displayed on the data display system (not shown), and in not being required, when ending the educator signal T= 1 when it is required information, and ending the educator signal T= 0 and processing, he returns to the educator signal input terminal 105 as educator signal T=-1 (this drawing step (**)). In the case of educator signal T=-1, processing is ended. In the case of educator signal T!=-1, (this drawing step (**)) and the unread data output control section 11 Educator data expressed with (several 2) of the educator data storage section 13 TD[i] =TD [i-1] It replaces with i= 2, ..., nofTD (this drawing step (**)). The educator signal T, and said number signal nofKs of keywords [1] and keyword group signal Ks [1] of said unread data are used for the 1st educator data TD [1], and it is T [1]. =TTnofKs [1] =nofKs [1]

TKs[1] =Ks[1]

It is the unread data URD of said unread data storage section 10 exchangeably (this drawing step (**), (**)). URD[i] =URD [i+1] i= 1 ... (nofURD-1)

It carries out (this drawing step (**), (mosquito)), and is the need signal of nofURD position unread data N[nofURD] = (minimum value Vmin)

It carries out (this drawing step (**), (**), (**)).

[0107] Next, it explains, referring to the flow chart shown in drawing 6 - drawing 8 about actuation of the study unit 52.

[0108] the flow chart example which shows the outline of actuation of the learning-control section 14 to drawing 6 -- it explains in detail.

[0109] In drawing 6 , first, the study start signal LS is inputted from the study start signal input terminal 106, the learning-control section indication signal LI outputted from the learning-control section indication signal output terminal 107 is changed into 1 from 0 ( drawing 6 step (**)), and under processing is shown. Next, it changes so that the metric study section 19 and the vector generation section 20 for study may connect a switch 16, a switch 17, and a switch 18 (this drawing step (**)).

[0110] Next, the metric study section 19 corresponding to the step (Ha) of drawing 7 is operated (after operating this drawing step (Ha) and the judgment side study section 21 (this drawing step (**)), processing is ended using LI as 0 (this drawing step (**)).).

[0111] Next, the metric study section 19 explains the actuation which corrects affirmation/negation metric signal using drawing 7 using a user's response (educator signal T) and the keyword group signal Ks.

[0112] Drawing 7 is the flow chart of actuation of the metric study section 19, and the carrier beam ( drawing 7 step (**)) metric study section 19 reads [ the metric learning-control signal MLC ] the negative metric storage section 6 to the negative metric signal MN for the affirmation metric storage section 5 to the affirmation metric signal MY from said learning-control section 14 in this drawing, respectively.

[0113] Next, the metric study section 19 sets the value of the educator data counter c to 1 (this drawing step (**)). Next, c-th educator data signal TD [c] is read from the educator data storage section 13 (this drawing step (Ha)), and educator signal [ of the educator data TD [c] ] T [c] is investigated. When said educator signal T [c] is not -1 (T!=-1), (this drawing step (**)), and the number signal TnofKs of keywords [c] and the keyword group signal TKs [c] of the educator data TD [c] are outputted (this drawing step (**)). The vector generation section 20 for carrier beam study performs the same actuation as the vector generation section 1 of the above-mentioned information filtering unit 50 for the number signal TnofKs of keywords [c] and the keyword group TKs [c] of said educator data TD [c], and the vector signal LV for study is outputted (this drawing step (**)). The metric study section 19 is MY[i] [j] =MY[i] [j]+LV[i] and LV [j] about the (this drawing step (**)) affirmation metric signal

MY, when said vector signal LV for study is received and educator signal [ of said educator data TD [c] ] T [c] is T= 1.
(-- here, it corrects with i, and j= 1 - nofDiC) (this drawing step (**)).
[0114] By this processing, the affirmation metric signal MY comes to have a big value to the keyword signal (plurality) currently attached to the information data D which the user needed. Consequently, the above-mentioned affirmation signal SY comes to become large to the information data D which a user needs. The processing same as follows is made also for the negative metric signal MN.
[0115] the case where educator signal [ of said educator data TD [c] ] T [c] is T= 0 -- the negative metric signal MN -- MN[i] [j] =MN[i] [j]+LV[i] and LV [j]
(-- here, it corrects with i, and j= 1 - nofDiC) (this drawing step (Li)).
[0116] Only 1 increases the value of an educator data counter as c=c +1 (this drawing step (**)).
[0117] Hereafter, the metric study section 19 repeats the same actuation until educator signal [ of the educator data TD [c] ] T [c] is set to T[c] =-1 or it serves as c=nofTD. When it comes to T[c] =-1 or c=nofTD, processing of (this drawing step (**)) and metric study is ended, and the metric learning-control signal MLC is sent to the learning-control section 14.
[0118] In response to the metric learning-control signal MLC from the metric study section 19, the learning-control section 14 is changed so that the vector generation section 20 for study and the score count section 22 may connect a switch 16, and it is changed so that the vector generation section 20 for study and the judgment side study section 21 may connect a switch 17 and a switch 18. The learning-control section 14 sends the judgment side learning-control signal PLC to the judgment side study section 21.
[0119] Next, the judgment side study section 21 is explained in detail using drawing 8 . The judgment side study section 21 asks for the coefficient C which separates best the information data D made unnecessary [ the information data D and the user whom the user expressed on two-dimensional space using the affirmation signal SY and the negative signal SN needs ], as shown in drawing 10 . For this object, it explains in detail according to the flow chart shown in drawing 8 .
[0120] First, the value of the educator data counter c is set to 1 in response to said judgment side learning-control signal PLC ( drawing 8 step (**)) (this drawing step (**)). c-th educator data signal TD [c] is read from the educator data storage section 13 (this drawing step (Ha)), and educator signal [ of the educator data TD [c] ] T [c] is investigated (this drawing step (**)). When said educator signal T [c] is not -1 (T!=-1), the number signal TnofKs of keywords [c] and the keyword group signal TKs [c] of the educator data TD [c] are outputted (this drawing step (**)). The same actuation as the number signal TnofKs of keywords [c] of said educator data TD [c] and the vector generation section 1 of the information filtering unit 50 with which the vector

generation section 20 for carrier beam study mentioned the keyword group TKs [c] above is performed, and the vector signal LV for study is outputted.

[0121] The score count section 22 for study performs the same actuation as the score count section 3 of the information filtering unit 50 mentioned above, the affirmation signal LSY for study [c] and the negative signal LSN for study [c] are outputted, and the judgment side study section 21 receives it (this drawing step (**)). Said affirmation signal LSY for study [c], said negative signal LSN for study [c], educator signal [ of the educator data TD [c] ] T [c], and signal TC for judgment side study [c] = (T [c], LSN [c], LSY [c]) are memorized to an internal storage element (this drawing step (**)). And only 1 increases the value of an educator data counter as c=c +1 (this drawing step (**)).

[0122] Hereafter, the judgment side study section 21 repeats the same actuation until educator signal [ of the educator data TD [c] ] T [c] is set to T[c] =-1 or it serves as c=nofTD +1 (this drawing step (Li)). When it comes to T[c] =-1 or c=nofTD, processing of the affirmation signal LSY [c] count for study etc. is ended.

[0123] Next, the signal TC for judgment side study [c] (c= 1, ...) with which the judgment side study section 21 was memorized by the internal storage element will serve as distribution as shows drawing 9 , if an axis of abscissa is set to LSN [c], and it sets an axis of ordinate to LSY [c], and O shows T[c] =1 and it shows T[c] =0 by x. What is educator signal T[c] =1, and said thing which is educator signal T[c] =0 calculate the judgment parameter C which can be best separated as shown in drawing 10 by the climbing-a-mountain method among these (this drawing step (**)). Next, said judgment parameter C is written in the judgment parameter storage section 8, and delivery (this drawing step (**)) and processing are ended for the judgment side learning-control signal PLC in the learning-control section 14. The learning-control section 14 receives the judgment side learning-control signal PLC from the judgment side study section 21, makes it the value which shows under the standby by the learning-control section indication signal, and ends processing.

[0124] As shown in drawing 10 , unnecessary information mainly comes to be distributed over the upper left at the lower right by the information for which a user needs a keyword group signal on the two-dimensional space expressed with the affirmation signal SY and the negative signal SN using two above-mentioned metric signals. therefore, the above -- it comes to take a big value to the information for which, as for N=SY-C-SN, then a need signal, a user needs a need signal using a suitable coefficient C like.

[0125] In addition, the cost function constituted as the count approach of the judgment parameter C here based on the distance of a judgment side, the need signal LN for study, and the dependability signal LR for study although the climbing-a-mountain method was adopted [0126]

[Equation 6]

$$COST = \sum_{c}(2 \cdot T[c] - 1)(LSN[c] - C \cdot LSY[c])$$

[0127] You may be the approach of asking for the judgment side parameter C made into max by Newton's method, the attacking method, etc.

[0128] Moreover, MY[i] [j] = alpha-MY [i] [j]+LV[i] and LV which put in the effectiveness of oblivion of study of the affirmation metric signal MY and the negative metric signal MN [j]

MN[i] [j] = beta-MN [i] [j]+LV[i] and LV [j]

A result also with sufficient ******** is obtained. (Positive number with beta smaller here than alpha and1) If the configuration which adds the keyword generation section which generates a keyword group signal and the number signal of keywords further from the document indicated by reference "an Information Processing Society of Japan technical report and natural language processing 101-8 (1994. 5.27)" etc. is taken, information filter equipment applicable also to the information to which the keyword is not given can be constituted.

[0129] About the information to which the title was attached, it may consider as a keyword with the word which constitutes a title, and the number signal of keywords and a keyword group signal may be generated.

[0130] In addition, even if it also makes it a keyword signal include class letters, such as the International Patent Classification number, it does not need to change the configuration of this invention and can obtain a good result.

[0131] Moreover, although the gestalt 1 of operation of this invention showed the case where every one unread data URD was shown, it is easy to take a configuration which information filter equipment is told correctly that it is to which unread data by which it was indicated by two or more two or more unread data URD were simultaneously displayed depending on the magnitude of an indicating equipment (not shown), and the user answered.

[0132] As shown to TO of the flow chart of drawing 7 , CHI, and Li, the basis of the information filter of this invention The affirmation metric signal MY which observed the relation of the response and keyword of a user at the simultaneous appearance of a keyword You make it reflected in a negative metric signal, and the notation information of a keyword is projected on the space where distance was defined by changing a keyword group signal into the affirmation signal SY and the negative signal SN using these two metric signals. This can estimate the distance of a keyword group now with the analog scale of distance. By using this, it becomes possible by the Prior art for assessment of the need only the need or whose unnecessary alternative-judging was completed to arrange in order of the need for a user.

[0133] According to the information filter equipment of the gestalt 1 of operation of this invention, to the information which a user needs, it comes to take a value with a

big need signal, consequently the information that need is high comes to be preferentially displayed on interface units, such as a display, for a user by the study based on the educator signal from a user.

[0134] (Gestalt 2 of operation) The gestalt of operation of the 2nd of this invention is explained hereafter, referring to a drawing. The gestalt 2 of operation is improved to what added the dictionary study section to the configuration of the gestalt 1 of operation, updated so that the sign dictionary signal DCK memorized by the dictionary storage section 2 might be adapted for a user, and took into consideration the probability distribution whose information is the need / appearing unnecessary keyword from the autocorrelation matrix of the keyword corresponding to simple frequency distribution for the affirmation metric signal MY and the negative metric signal MN.

[0135] Although the block schematics of the information filter equipment of the gestalt 2 of operation of this invention are shown in drawing 11 , a different configuration from the block schematics of the information filter equipment of the gestalt 1 of operation of this invention mentioned above is explained to a detail.

[0136] The dictionary study section which 23 receives the dictionary study signal DLC from the learning-control section 14, and updates the sign dictionary signal DCK of the dictionary storage section 2 in drawing 11 , When, as for 24, the character string W and Figure C are included in the keyword group signal Ks the table which consists of a count PN of negation which shows the count which the user answered that the information data D are unnecessary when the count PY of affirmation and character string W which show the count to which was resembled and the user answered the information data D the need were contained in the keyword group signal Ks -- a nofFDCK piece -- the adaptation sign dictionary signal which it has

[0137]

[Equation 7]

$$FDCK[1] = (W[1], C[1], PY[1], PN[1])$$

$$\cdot$$

$$\cdot$$

$$\cdot$$

$$FDCK[nofFDCK] = (W[nofFDCK], C[nofFDCK], PY[nofDCK], PN[nofFDCK])$$

[0138] The memorized adaptation sign dictionary signal storage section, the count storage section which memorizes the count signal NN of total negation which shows the count which 25 answered all the count signals NY of affirmation that show the count which the user answered the need, and needlessness, The primary affirmation metric storage section 26 remembers the primary affirmation metric signal MY 1 for renewal of affirmation metric to be, The primary negation metric storage section 27

remembers the primary negation metric signal MN1 for renewal of negative metric one to be, 28 calculates the affirmation metric signal MY and the negative metric signal MN which were improved from said count signal of affirmation, said count signal of negation, and said primary affirmation metric signal MY 1 and said primary negation metric signal MN1. It is KD metric study section which writes each in the affirmation metric storage section 5 and the negative metric storage section 6.

[0139] About the information filter equipment constituted as mentioned above, actuation is explained using a drawing. However, the part as the gestalt 1 of operation where actuation is the same omits explanation.

[0140] An example of the desirable initial state of information filter equipment The affirmation metric signal MY and the negative metric signal MN A zero matrix (nofDCKxnofDCK), The minimum value Vmin which can express the hardware which uses all the need signals N [i] (i= 1, ..., nofURD) of the unread data URD of the unread data storage section 10 [i] Altogether the character string W of -1 and an adaptation sign dictionary signal for educator signal [ of the educator data TD of the educator data storage section 13 [j] ] T [j] A blank, It is in the condition which corresponded Figure C sequentially from the sign dictionary signal FDCK top, corresponded 1, 2, ...., nofFDCK, the count PY of affirmation, and the count PN of negation to 0 and an adaptation sign dictionary, and also made all the character strings of a sign dictionary the blank.

[0141] First, actuation of the information filtering unit 50 is explained. In the case of an above-mentioned initial state, the information filtering unit 50 performs actuation as indicated in the gestalt 1 of operation, both the need signal N and the dependability signal R are calculated with 0 from the number signal nofKs of keywords, the keyword group signal Ks, and the information data D which were inputted, and it stores in the unread data storage section 10.

[0142] Next, an interface unit 51 performs the same actuation as the gestalt 1 of operation, and sends the educator data TD to which a user's response was attached to the educator data storage section 13.

[0143] As for actuation of the study unit 52, the study start signal LS is first inputted from the study start signal input terminal 106. The learning-control section 14 changes into 1 from 0 the learning-control section indication signal LI outputted from the learning-control section indication signal output terminal 107 in response to said study start signal LS, and shows under processing. Furthermore, the dictionary study signal DLC is sent to the dictionary study section 23.

[0144] Actuation of the dictionary study section 23 is explained referring to the flow chart shown in drawing 12 hereafter. First, in response to the dictionary study signal DLC ( drawing 12 step (**)), the adaptation sign dictionary FDCK is read into the adaptation code-signal buffer which can memorize the adaptation code signal of a maximum nofFDCKtmp individual from the adaptation sign dictionary storage section

24. The primary negation metric signal storage section 27 to the primary negation metric signal MN1 is read [ all the count signals NY of affirmation, and the count signal NN of total negation ] for the primary affirmation metric storage section 26 to the primary affirmation metric signal MY 1 from the count storage section 25 (this drawing step (**)). Next, the value of the internal educator data counter c is set to 1 (this drawing step (Ha)), the educator data TD [c] are read from the educator signal storage section 13 (this drawing step (**)), and it judges whether educator signal T [c] is -1 (this drawing step (**)).

[0145] In the case of T[c] !=-1, the following processings are performed. First, the value of the internal number counter i of keywords is set to 1 (this drawing step (**)), and the value of the adaptation sign dictionary counter j is set to 1 (this drawing step (**)). Next, it judges whether said character string W [j] is blank or there is nothing (this drawing step (**)), and in being blank, it replaces said character string W [j] by said keyword signal TK [i] (this drawing step (Li)). In not being blank, it compares character string [ of the i-th keyword signal TK [i] of the educator data TD [c], and the j-th adaptation sign dictionary signal FDCK [j] ] W [j] (this drawing step (**)).

[0146] When said character string W [j] is a blank, or when it is not blank and the keyword signal TK [i] and said character string W [j] are in agreement, the following processings are performed according to the value of T [c]. In the case of T[c] =1 (this drawing step (**)), 1 is added to all the affirmation signals NY (this drawing step (**)), and 1 is added to the count PY of affirmation [j] of the adaptation sign dictionary signal FDCK [j] (this drawing step (**)). Although T[c] !=1 and this are the cases of T[c] =0, 1 is added to the total negation signal NN (this drawing step (mosquito)), and 1 is added to the count PN of negation [j] of the adaptation sign dictionary signal FDCK [j] (this drawing step (**)).

[0147] When said W [j] is not blank and the keyword signal TK [i] and said character string W [j] are not in agreement, the value of the adaptation sign dictionary counter j is increased one (this drawing step (**)). The value of the adaptation sign dictionary counter j compares with value nofFDCKtmp+1 which added 1 to the number of adaptation code signals memorizable to an adaptation sign dictionary signal buffer (this drawing step (**)). In the case of not more than nofFDCKtmp+1, character string W [j] returns [ the value of the adaptation sign dictionary counter j ] to the judgment of being a blank.

[0148] When other, only 1 increases the value of said keyword counter i (this drawing step (**)).

[0149] When small as compared with value TnofKs+1 which added 1 to the number signal TnofKS of keywords of said educator data TD [c] (this drawing step (Thu)), the value of said keyword counter i sets the dictionary counter j to 1, and performs same processing. when other, only 1 increases the value of the educator data counter c (this drawing step (**)). The value of the educator data counter c is compared with

value nofTD+1 which added 1 to the number nofTD of educator data (this drawing step (**)), when the value of the educator data counter c is small, the following educator data TD [c] are read and same processing is performed.

[0150] The above processing is performed to all the educator data TD. Next, the dictionary study section 23 calculates the keyword cost signal KD to each adaptation sign dictionary signal FDCK [j]. This keyword cost signal is an amount used in order to judge whether character string W [j] is effective as a keyword.

[0151] By the way, probability NN/in which a user's unnecessary information data D appear (NY+NN)

Probability [ when the information data D to which it compares and character string W [j] is attached are unnecessary for a user ] PN [j]/(PY[j]+PN [j])

** -- if it is a thing so that it may become large when it differs greatly, character string W [j] is effective when judging with the information data D being unnecessary for a user. Probability NY/in which similarly a user's required information data D appear (NY+NN)

Probability [ when the information data D to which it compares and character string W [j] is attached are required for a user ] PY [j]/(PY[j]+PN [j])

** -- if it is a thing so that it may become large when it differs greatly, character string W [j] is effective when the information data D judge with the need for a user.

[0152] The keyword cost signal KD is [0153] which will be called cull back divergence as one of the desirable examples although it is good anything if it is in the amount reflecting this property.

[Equation 8]

$$NY/(NY+NN)\cdot\log((PY[j])/(PY[j]+PN[j]) +NN/(NY+NN)\cdot\log((PN[j])/(PY[j]+PN[j])$$

[0154] **********. However, this has the cases are unsuitable, such as overestimating the keyword cost signal of the adaptation sign dictionary signal FDCK [j] which fills PY[j]+PN[j] **1 which cannot perform count of log(), when all the count signals NY of affirmation, such as an initial state of this information filter equipment, the count signal NN of total negation, the count PY of affirmation [j], and the count PN of negation [j] are 0, if it remains as it is. One of the desirable gestalten of operation which avoids this is a keyword cost signal [0155]

[Equation 9]

$$KD[j]$$
$$= \tanh((PY[j]+PN[j])/PC) \cdot$$
$$\tanh\{NY/(NY+NN)$$
$$\cdot \log((PY[j]+\varepsilon)/(PY[j]+PN[j]+2\varepsilon)$$
$$+NN/(NY+NN)$$
$$\cdot \log((PN[j]+\varepsilon)/(PY[j]+PN[j]+2\varepsilon)\}$$

[0156] It carries out. Here, epsilon is a parameter with the forward small value for avoiding the division of 0, and log0. Parameter PC is good to consider as about three value.

[0157] Next, character string [ of the adaptation sign dictionary signal FDCK [j] ] W [j], the count PY of affirmation [j], and the count PN of negation [j] are rearranged into descending of the keyword cost signal KD (this drawing step (**)). At this time, the first order of a list remains in the figure C [j] of the adaptation sign dictionary FDCK [j]. This is used. From the primary affirmation metric signals MY1 and C [j] to C [i] the value of C [j] -- both -- several [ of the sign dictionary DCK ] -- case it is smaller than nofDCK -- M[i] [j] =MY1[-- C[i]] [-- C [j]] i, j= 1, and .. in the case of nofDCK and others the case of i=j -- M[i] [i] =PY[-- C [i]] i= 1 and .. in nofDCKi!=j M[i] [j] =0 i, j= 1, and .. after being referred to as nofDCK -- MY1[i] [j] =M [i], [j], i, j= 1, and .. nofDCK and the primary affirmation metric signal MY 1 are replaced. The same replacement is performed also to the primary negation metric signal MN1 (this drawing step (**)).

[0158] And the figure C [j] of the adaptation sign dictionary FDCK in an adaptation sign dictionary signal buffer [j] is replaced with C[j] =j, j= 1, ..., nofFCKtmp.

[0159] After finishing the above processing, the dictionary study section 23 writes character string [ of the high order nofDCK individual of the adaptation sign dictionary FDCK in an adaptation sign dictionary buffer ] W [j], and Figure C [j] in the dictionary storage section 2. The high order nofFDCK individual of the adaptation sign dictionary signal FDCK in an adaptation sign dictionary buffer [j] is written in the adaptation sign dictionary storage section 24. All the count signals NY of affirmation and the count signal NN of total negation are written in the count storage section 25, the primary affirmation metric signal MY 1 is written in the primary affirmation metric signal storage section 26, and the primary negation metric signal MN1 is written in the primary negation metric signal storage section 27 (this drawing step (**)).

[0160] Finally, the dictionary study signal DCL is returned to the learning-control section 14 (this drawing step (**)), and processing is ended.

[0161] Next, said learning-control section 14 is changed so that the metric study section 19 and the vector generation section 20 for study may connect a switch 16, a switch 17, and a switch 18. Said learning-control section 14 sends the metric learning-control signal MLC to KD metric study section 28.

[0162] The carrier beam KD metric study section 28 reads [ said metric learning-control signal MLC ] the primary negation metric storage section 27 to the primary negation metric signal MN1 for the primary affirmation metric signal MY 1 from the primary affirmation metric storage section 26 first, respectively.

[0163] Next, KD metric study section 28 sets the value of the educator data counter c to 1. c-th educator data signal TD [c] is read from the educator data storage section 13, and educator signal [ of the educator data TD [c] ] T [c] is investigated. When said educator signal T [c] is not -1 (T!=-1), the number signal TnofKs of keywords [c] and the keyword group signal TKs [c] of the educator data TD [c] are outputted. The same actuation as the vector generation section 1 of the information filtering unit 50 of the gestalt 1 of operation with which the vector generation section 20 for carrier beam study mentioned above the number signal TnofKs of keywords [c] and the keyword group TKs [c] of said educator data TD [c] is performed, and the vector signal LV for study is outputted. the case where KD metric study section 28 receives said vector signal LV for study, and educator signal [ of said educator data TD [c] ] T [c] is T= 1 -- the primary affirmation metric signal MY 1 -- MY1 -- [i] [j] =MY1[i] [j]+LV[i] and LV [j]

(-- here, it corrects with i, and j= 1 - nofDiC). the case where educator signal [ of said educator data TD [c] ] T [c] is T= 0 -- the primary negation metric signal MN1 -- MN1 -- [i] [j] =MN1[i] [j]+LV[i] and LV [j]

(-- here, it corrects with i, and j= 1 - nofDiC). Only 1 increases the value of an educator data counter as c=c +1.

[0164] Hereafter, KD metric study section 28 repeats the same actuation until educator signal [ of the educator data TD [c] ] T [c] is set to T[c] =-1 or it serves as c=nofTD. When it comes to T[c] =-1 or c=nofTD, study of the primary affirmation metric signal MY 1 and the primary negation metric signal MN1 is finished.

[0165] Next, all the count signals NY of affirmation and the count signal NN of total negation are read from the count storage section 25, and the affirmation metric signal MY is calculated using the primary affirmation metric signal MY 1 and the primary negation metric signal MN1.

[0166] In this way, for the affirmation metric signal MY calculated and the negative metric signal MN, the affirmation signal SY and the negative signal SN which are calculated as well as the keyword cost signal KD are probability NN/(NY+NN) in which a user's unnecessary information data D appear.

Probability [ when the information data D to which it compares and character string W [j] is attached are unnecessary for a user ] PN [j]/(PY[j]+PN [j])

** -- probability NY/(NY+NN) in which it is a thing so that it may become large, and a user's required information data D appear when it differs greatly
Probability [ when the information data D to which it compares and character string W [j] is attached are required for a user ] PY [j]/(PY[j]+PN [j])
** -- if it has the property to be a thing so that it may become large when it differs greatly, it is good anything. The desirable thing which fills this is the affirmation metric signal MY [0167]
[Equation 10]

$$MY[i][j] = NY/(NY+NN) \cdot \log\left((MY1[i][j]+\varepsilon)\cdot(NY+NN) / (NY\cdot(MY1[i][j]+MN1[i][j]+2\varepsilon))\right)$$

[0168] It calculates and is the negative metric signal MN [0169]
[Equation 11]

$$MN[i][j] = NN/(NY+NN) \cdot \log\left((MN1[i][j]+\varepsilon)\cdot(NY+NN) / (NN\cdot(MY1[i][j]+MN1[i][j]+2\varepsilon))\right)$$

[0170] It calculates. Here, epsilon is a parameter with the forward small value for avoiding the division of 0, and log0.
[0171] And the negative metric signal MN newly calculated [ signal / MN1 / which was updated by the primary affirmation metric signal storage section 26 in the updated primary affirmation metric signal MY 1 / primary negation metric ] in the count **** affirmation metric signal MY to the affirmation metric storage section 5 is written in the primary negation metric signal storage section 27 to the negative metric storage section 6. Above, KD metric study section 28 ends processing of metric study, and sends the metric learning-control signal MLC to the learning-control section 14.
[0172] In response to the metric learning-control signal MLC from KD metric study section 28, the learning-control section 14 is changed so that the vector generation section 20 for study and the score count section 22 may connect a switch 16, and it is changed so that the vector generation section 20 for study and the judgment side study section 21 may connect a switch 17 and a switch 18. The learning-control section 14 sends the judgment side learning-control signal PLC to the judgment side study section 21.

[0173] Since actuation of the judgment side study section 21 is completely the same as the gestalt 1 of operation, explanation is not repeated.

[0174] Once, since the sign dictionary of the dictionary storage section 2 is no longer empty when the above processing is performed, the need [ of being outputted from the information filtering unit 50 ] signal N, and the dependability signal R stop being 0, and the high information data of the need for a user come to be written in the high order of the unread data storage section 10.

[0175] Henceforth, in order to judge whether it is the information which a user needs by repeating the above-mentioned processing, an effective keyword comes to be preferentially memorized by the dictionary storage section 2, and even if it is a small-scale dictionary, information filtering with a high precision is attained.

[0176] In addition, as the count approach of the judgment parameter C, although the climbing-a-mountain method was adopted, you may be the approach of asking for the judgment side parameter C which makes max the cost function constituted based on the distance of a judgment side, the need signal LN for study, and the dependability signal LR for study by Newton's method, the attacking method, etc. like the gestalt 1 of operation here. furthermore -- as a simple approach -- C=tanthetai -- here -- thetai=0.5andpi (i/90) i= -- the approach referred to as choosing C which can separate best the information which is T[c] =1, and the information which is T[c] =0 out of 1, ..., 90 can also be considered.

[0177] moreover, MY1 which put in the effectiveness of oblivion of study of the primary affirmation metric signal MY 1 and the primary negation metric signal MN1 -- [i] [j] = alpha-MY 1[i] [j]+LV[i] and LV [j]

MN1 -- [i] [j] = alpha-MN 1[i] [j]+LV[i] and LV [j]

A result also with sufficient ******** is obtained. (Here, alpha is a positive number smaller than 1) or When either MY1 [i], [j] or MN1 [i] and [j] are able to come constant value, it is desirable operationally to constitute as MY1[i] [j] =MY1[i] [j]/2MN1[i] [j] =MN1[i] [j] / 2, so that overflow of a signal may be prevented. This is the same also about the count PY of affirmation [j], the count PN of negation [j], and all the count signals NY of affirmation and the count NN of total negation of the adaptation sign dictionary signal FDCK [j].

[0178] Furthermore, if the configuration which adds the keyword generation section which generates a keyword group signal and the number signal of keywords from the document indicated by reference "an Information Processing Society of Japan technical report and natural language processing 101-8 (1994. 5.27)" etc. is taken, information filter equipment applicable also to the information to which the keyword is not given can be constituted.

[0179] About the information to which the title was attached, it may consider as a keyword with the word which constitutes a title, and the number signal of keywords and a keyword group signal may be generated.

[0180] In addition, even if it also makes it a keyword signal include class letters, such as the International Patent Classification number, it does not need to change the configuration of this invention and can obtain a good result.

[0181] Moreover, although the gestalt of this operation showed the case where every one unread data URD was shown, it is easy to take the configuration which tells about which unread data URD two or more unread data URD were simultaneously displayed depending on the magnitude of an indicating equipment (not shown), and the user answered correctly to information filter equipment.

[0182] As mentioned above, the basis of the information filter of the gestalt 2 of operation of this invention is by introducing metric one which took notice of the simultaneous appearance of a keyword to have projected the notation information of a keyword on the space where distance was defined. This can estimate the distance of a keyword group now with the analog scale of distance. By using this, it becomes possible by the Prior art for assessment of the need only the need or whose unnecessary alternative-judging was completed to arrange in order of the need for a user.

[0183] According to the information filter by the gestalt of this operation, to the information which a user needs, it comes to take a value with a big need signal, consequently the information that need is high comes to be preferentially displayed on a display for a user by the study based on the educator signal from a user.

[0184] (Gestalt 3 of operation) The gestalt of operation of the 3rd of this invention is explained hereafter, referring to a drawing. The gestalt 3 of operation adds a database reconstruction control section, the database read-out section, the adaptation database write-in section, etc. to the configuration of the information filter equipment of the gestalt 1 of operation of this invention, is what used as information filter equipment database reconstruction equipment, and offers the adaptation database with which data were located in a line with required order for the user using the function of the interface unit 51 of the gestalt 1 of operation, the study unit 52, and an information filtering unit and which is easy to use.

[0185] The database reconstruction equipment block schematics of the gestalt 3 of operation of this invention are shown in drawing 13 , and it explains below.

[0186] The database read-out section which operates orthopedically and outputs data to the form where 60 read the database storage section, 61 read data from the database storage section 60, and it was suitable for information filter equipment in drawing 13 , The database reconstruction control section by which 62 controls reconstruction of a database, The adaptation database write-in section which a switch and 65 hold the adaptation database storage section, and, as for 63, 64 holds the signal from an information filtering unit temporarily, and writes the final result in the adaptation data storage section, The control signal input terminal with which 200 controls the database reconstruction control section 62, and 201 are the number

signal input terminals of study which input the number signal of study data. Since it is the same configuration as the information filter equipment indicated in the gestalt 1 of operation, other things are omitted.

[0187] Actuation of the database reconstruction equipment constituted as mentioned above is explained. First, the control signal which shows database reconstruction initiation from the control signal input terminal 200

CDB=1 is inputted and the number signal LN of study which shows the count of study of information filter equipment from the number signal input terminal 201 of study is inputted. It is shown that the database reconstruction control section 62 changes into 1 from 0 the database reconstruction control-lead signal IRD outputted from the database reconstruction control-lead signal output terminal 210, and is processing it. The database reconstruction control section 62 changes a switch 63 so that the information filtering unit 50 and the unread data storage section 10 may be connected. The database reconstruction control section 62 hears the number of the data memorized by the database read-out section 61 at the database storage section 60 in response to a control signal CDB (= 1). The database read-out section 60 counts the number of the data memorized by the database storage section 60, and sends it to the database reconstruction control section 62 by making the result into the number signal nofD of data. The database reconstruction control section 62 replaces the content of the number nofURD of unread data in the adaptation database write-in control section 64 by the number signal nofD of data. Next, the database reconstruction control section 62 reads the number signal LN of study, and sends it to the database read-out section 61 as a number signal RDN of data.

[0188] In response to the number signal LN of study, the database read-out section 61 reads the data of LN individual from the database storage section 60 one by one, carries out required plastic surgery, and sends it to the information filtering unit 50.

[0189] The information filtering unit 50 performs actuation indicated in the gestalt 1 of operation, and stores it in the unread data storage section 10.

[0190] A user starts the interface unit 51, reads the unread data URD of LN individual stored in the unread data storage section 10 one by one, and inputs the educator signal T which shows important point needlessness. After an input finishes about the unread data of LN individual, a user inputs the study start signal LS from the study start signal input terminal 106, and learns information filter equipment. if the learning-control section indication signal LI outputted from the learning-control section indication signal output terminal 107 is set to 0 from 1 so that termination of study may be shown, the database reconstruction control section 62 will newly read the data of LN individual -- as -- reading appearance -- carrying out -- the number signal RDN of data -- database reading appearance -- carrying out -- a control section 61 -- delivery -- the data of LN individual are newly put in order and changed through the information filtering unit 50.

[0191] Again, a user starts an interface unit 51, checks whether required information is coming to the high order, judging whether it is [ data / of LN individual / URD / unread ] unnecessary in the need, and decides whether information filter equipment is made to learn further.

[0192] The engine performance of information filter equipment is inadequate, in making it learn further, the study start signal LS inputs a user from the study start signal input terminal 106 again, and he learns information filter equipment.

[0193] The control signal which shows database reconstruction activation from the control signal input terminal 200 when riser study has the less necessary fully engine performance of information filter equipment

CDB=2 are inputted. First, the database reconstruction control section 62 is changed so that the information filtering unit 50 and the adaptation database write-in section 64 may connect a switch 63. Next, the database reconstruction control section 62 is read so that the data of the number nofD individual of data memorized by the database storage section 60 may be read, and it sends the number signal RDN of data to the database read-out section 61. The database read-out section 61 reads the data of a nofD individual one by one, and sends them to the information filtering unit 50. The information filtering unit 50 rearranges data into the buffer in the adaptation database write-in section 64 based on need.

[0194] If the number of the written-in data is set to nofD, the adaptation database write-in section 64 will write the content of the buffer in the adaptation database storage section 65, and will send the write-in terminate signal EW to the database reconstruction control section 62. The database reconstruction control-lead signal IRD with which the carrier beam database reconstruction control section 62 is outputted from the database reconstruction control-lead signal output terminal 210 in the write-in terminate signal EW is changed into 0 from 1, and processing is ended.

[0195] By constituting database reconstruction equipment as mentioned above, the adaptation database with which data were located in a line with order required for a user and which is easy to use can be made.

[0196] In addition, with the gestalt of this operation, although the adaptation database had the data same as a whole as the original database, in order to save the memory area of a store, the effectiveness same only also as a link information between data is acquired in the content of the adaptation database.

[0197] (Gestalt 4 of operation) The gestalt of operation of the 4th of this invention is explained hereafter, referring to a drawing. By adding the retrieval-by-keyword type generation section, the keyword assessment signal sort section, the keyword assessment section, etc. to the configuration of the information filter equipment of the gestalt 2 of operation, about the "information" which the user was shown, the gestalt 4 of operation only answers the need/needlessness, and offers the retrieval-by-keyword type generation equipment which can generate automatically

the retrieval type which retrieves required information.

[0198] The block schematics of the retrieval-by-keyword type generation equipment are shown in drawing 14 , and it explains below.

[0199] In drawing 14 111 A retrieval-by-keyword type generation start signal input terminal, 112 is the retrieval-by-keyword type approach change signal input terminal, and 113 is a retrieval-by-keyword type signal output terminal. The keyword assessment section which calculates the keyword assessment signal KWKD (i, j) by which 30 evaluates the importance of a metric component (i, j), The keyword assessment signal sort section which 31 arranges said keyword assessment signal in small order, and is changed, and 32 are the retrieval-by-keyword type generation sections changed into the retrieval-by-keyword type signal Eq using an adaptation dictionary signal with the keyword assessment signal put in order and changed. Since other blocks are the same configurations as the information filter equipment of the gestalt 2 of operation, they omit explanation.

[0200] the flow chart of the actuation of the second half to drawing 15 by the flow chart in the first half of actuation of the retrieval-by-keyword type generation equipment constituted as mentioned above -- three approaches -- corresponding -- drawing 16 , and 17 and 18 -- it is alike, respectively and is shown. Hereafter, it explains, referring to these drawings.

[0201] The first half of of operation is explained referring to drawing 15 . First, the retrieval-by-keyword type generation start signal EqGO which makes generation of a retrieval-by-keyword type start is inputted from the keyword generation start signal input terminal 111.

[0202] First, the carrier beam keyword assessment section 30 reads all the count signals NY of affirmation, and the count signal NN of total negation for the retrieval-by-keyword type generation start signal EqGO from the count storage section 25, and reads the primary negation metric signal storage section 27 to the primary negation metric signal MN1 for the primary affirmation metric signal MY 1 from the primary affirmation metric storage section 26 ( drawing 15 step (**)).

[0203] Next, in order to check whether the user has done the need / unnecessary response about the information which information filter equipment presented until now, the keyword assessment section 30 calculates the sum (NY+NN) of all the affirmation signals NY and the total negation signal NN, and calculates product NY-NN- (NY+NN) further (this drawing step (**)). Since it responds to it not being taught whether what kind of information is required for information filter equipment from a user, and what kind of its information is unnecessary that said product is 0, the retrieval-by-keyword type for which the user is asking in this case cannot be presumed. then, the keyword assessment section 30 -- the retrieval-by-keyword type output signal Eq -- Eq= (a retrieval-by-keyword type -- unknown)

It carries out, and outputs from the retrieval-by-keyword type signal output terminal

113, and processing is ended (this drawing step (Ha)). It is the information appearance rate (Qyes, Qno) which shows the rate made as unnecessary [ the keyword assessment section 30 ] as the rate of the information which the user needed when said product NY-NN- (NY+NN) is not 0 Qyes=NY/(NY+NN)
Qno =NN/(NY+NN)
It calculates (this drawing step (**)).

[0204] It thinks probable and it can be presumed that the keyword with the rate higher than said Qyes of having been attached to the information which the user needed is effective when taking out the information which a user needs. As the gestalt 2 of operation explained, the count of an appearance about the need / information made unnecessary is recorded for the user about coincidence of two keywords on the diagonal element by the keyword and the non-diagonal element at said primary affirmation metric signal MY 1 and said primary negation metric signal MN1 (coincidence of a keyword and two keywords is hereafter expressed as a keyword collectively). Therefore, the rate same about each component as Qyes and Qno is calculated.

[0205] For this reason, Counter i is first set to 0 (this drawing step (**)). Next, Counter j is set to 0 (this drawing step (**)).

[0206] The sum (MY1(i, j)+MN1 (i, j)) of said primary affirmation metric signal MY (i, j) and said primary negation metric signal MN1 (i, j) is calculated. This sum (MY1(i, j)+MN1 (i, j)) is a value which shows how many times of past that keyword has arisen. When this value is very small, it is thought that it is almost meaningless probable. Here, with [ this sum (MY1(i, j)+MN1 (i, j)) ] three [ or more ], it shall be adopted as assessment (this drawing step (**)). although this value (close value) is not independently cared about even if it does not come out three, it is understood that 3 to about four are convenient practically in our experiment.

[0207] Now, with [ this sum (MY1(i, j)+MN1 (i, j)) ] three [ or more ], it is a keyword appearance rate (Pyes, Pno) Pyes=(MY(i, j) +epsilon)/(MY(i, j) +MN(i, j) +2epsilon)
Pno =(MN(i, j) +epsilon)/(MY(i, j) +MN(i, j) +2epsilon)
It calculates (this drawing step (**)). Here, epsilon is a forward constant near 0 for making it Pyes and Pno not set to 0.

[0208] As an amount showing the difference between said keyword appearance rate (Pyes, Pno) and said information appearance rate (Qyes, Qno) the affirmation deflection signal VY (i, j) and the negative deflection signal VN (i, j) -- VY(i, j) =Qyes-log (Qyes/Pyes), zetaVN(i, j) =Qno, log (Qno/Pno), and zeta -- here -- zeta=tanh [(MY(i, j)+MN (i, j)) /3]
Come out and it is (this drawing step (Li)). This multiplier zeta is a device for attaching importance to what has many frequencies of occurrence comparatively. The value 3 presupposed that it is the same as the close value described here in the top. It is very good if needed more greatly than the close. In this way, about the keyword which

inclines toward required (unnecessary) information and appears, the affirmation (negation) deflection signal calculated has the property to become a negative small value, so that deviation is large.

[0209] With [ the sum (MY1(i, j)+MN1 (i, j)) ] two [ or less ], they are said affirmation deflection signal VY (i, j) and the negative deflection signal VN (i, j) VY(i, j) = 0VN(i, j) = It is referred to as 0 (this drawing step (**)).

[0210] After the above processing finishes, only 1 increases the value of Counter j (this drawing step (**)). If same processing is performed (this drawing step (**)) and the value of Counter j becomes that the value of Counter j is under the number of the lines of primary affirmation / negation metric signal more than with the number of the lines of primary affirmation / negation metric signal, only one counter i will be increased (this drawing step (**)). The value of Counter j is reset to 0 as the value of Counter i is under the number of the lines of primary affirmation / negation metric signal (this drawing step (**)), same processing is performed, and the processing to which the value of Counter i becomes more than the number of the lines of primary affirmation / negation metric signal is ended (this drawing step (mosquito)).

[0211] In this way, the keyword assessment signal which consists the acquired affirmation deflection signal VY (i, j) and the negative deflection signal VN (i, j) of five values

KWKD(nofDiC*i+j)= (VY(i, j)+VN (i, j), VY (i, j), VN (i, j), i, j)

It outputs by carrying out. what shows why the last two have a primary affirmation / negation metric component from the first -- it is -- after -- a response with a keyword -- it is required in order to carry out the price.

[0212] According to the retrieval-by-keyword type generation method change signal MCKW from a retrieval-by-keyword type generation method change signal input terminal, a keyword assessment signal puts the keyword assessment signal sort section 31 in order by three approaches, and it performs **** (this drawing step (**)).

[0213] The 1st approach (MCKW=1) is the approach of taking out only the keyword well attached to required information, and shows the flow chart to drawing 16 . The 2nd approach (MCKW=2) is the approach of taking out only the keyword well attached to unnecessary information, and shows the flow chart to drawing 17 . The 3rd approach (MCKW=3) is an approach which combined both, and shows the flow chart to drawing 18 . In the above, three approaches are explained in order.

[0214] The 1st approach shown in drawing 16 is chosen when the retrieval-by-keyword type generation method change signal MCKW is 1, and about the 2nd component VY (i, j), the keyword assessment signal KWKD is arranged sequentially from the smaller one, and it changes it ( drawing 16 step (**)). Thus, the 4th and 5th component of the keyword assessment signal put in order and changed is a value indicating the keyword which takes a big value only within required information. Then, the keyword signal sort section sends this keyword assessment signal SKWKD

put in order and changed to the retrieval-by-keyword type generation section 32.

[0215] When the retrieval-by-keyword type generation method change signal MCKW is 1, the retrieval-by-keyword type generation section 32 reads the adaptation dictionary signal FDCK with which one unit consists of four, a character string (keyword) W, Sign C and the count PY of affirmation corresponding to it, and the count PN of negation, from the adaptation sign dictionary signal storage section 24 from FDCK [1] to FDCK [nofFDCK] (this drawing step (**)).

[0216] the approach according to hand control in the approach of setting up the number of the terms of a retrieval-by-keyword type, and the approach of performing automatically -- all can be considered. Here, how to perform manually is explained. In this case, the arity signal TN is inputted from the arity signal input terminal 114 (this drawing step (Ha)).

[0217] Next, zero set of retrieval-by-keyword type signals KW is carried out (this drawing step (**)). One set of arity counters count is carried out (this drawing step (**)).

[0218] The 4th component i of the keyword assessment signal SKWKD (count) put in order and changed is read. The character string of the i-th adaptation sign dictionary signal FDCK [i] is changed into the 1st keyword KW1. The 5th component j of the keyword assessment signal SKWKD (count) put in order and changed is read, and the character string of the j-th adaptation sign dictionary signal FDCK of an adaptation sign dictionary signal [j] is changed into the 2nd keyword KW2 (this drawing step (**), (**)). And it is KW<-(kW) or (kW1 and KW2) about a retrieval-by-keyword type signal. It replaces (this drawing step (**)).

[0219] Only 1 increases an arity counter (this drawing step (Li)). Keyword assessment signals SKWKD (2) and SKWKD which put the same actuation in order hereafter and were changed (3) .... It repeats to SKWKD (TN) (this drawing step (**)). Upper processing is performed to the keyword assessment signal SKWKD (TN) put in order and changed, and the retrieval-by-keyword type signal KW is outputted.

[0220] In addition, one of the approaches which performs the arity close automatically is the approach of closing processing, when the keyword assessment signal used for arranging and changing becomes large to the value defined beforehand. Another approach of performing automatically is an approach of repeating processing until it can take out information to all the required information (you may set up to 90%, 80 etc.%, etc. if needed) used for study.

[0221] The 2nd approach shown in drawing 17 is chosen when the retrieval-by-keyword type generation method change signal MCKW is 2, arranges the keyword assessment signal KWKD sequentially from the smaller one about the 3rd component VN (i, j), and is changed. The hereafter same processing as the 1st approach mentioned above is performed, and the retrieval-by-keyword type KW connected with or is obtained. However, in the case of MCKW=2, since it is the

retrieval type which takes out unnecessary information, it is the negation KW about a retrieval-by-keyword type signal to the last. <- !. It is referred to as KW and processing is finished ( drawing 17 step (**)).

[0222] The 3rd approach shown in drawing 18 is chosen when the retrieval-by-keyword type generation method change signal MCKW is 3, arranges the keyword assessment signal KWKD sequentially from the smaller one about the 1st component (VY(i, j)+VN (i, j)), and is changed. This approach is an approach of using the affirmation retrieval-by-keyword type signal YKW and the negative retrieval-by-keyword type signal NKY as a medium expression.

[0223] Although processing is the processing same till a place as the ( drawing 18 step (**)) and the 1st approach in which the 1st keyword signal KW1 and the 2nd keyword signal KW2 are acquired, it is explained from the part from which it differs [ subsequent ] from the part of the processing which changes by the positive/negative of the following affirmation deflection signals VY (i, j).

[0224] When the affirmation deflection signal VY (i, j) of the keyword assessment signal SKWKD (1) put in order and changed is negative, it is YKW<-(YKW) or (kW1 and KW2) about the affirmation retrieval-by-keyword type signal YKW.

It replaces (this drawing step (**)). When the affirmation deflection signal VY (i, j) is forward, it is NKW<-(NKW) or (kW1 and KW2) about the negative retrieval-by-keyword type signal NKW.

It replaces (this drawing step (Li)). In the manual close, this processing is performed to SKWKD (TN) (this drawing step (**)).

[0225] Next, it is KW about the retrieval-by-keyword type signal KW. <- (YKW) and ! (NKW).

It outputs (this drawing step (**)) and processing is ended.

[0226] About the information shown the user as mentioned above, as for the retrieval-by-keyword type generation equipment of this invention, the need/needlessness is only answered and the retrieval type which retrieves required information can be generated automatically.

[0227] The effectiveness by experiment of the retrieval-by-keyword type generation equipment of the gestalt 4 of operation of this invention is shown and explained to drawing 19 .

[0228] The experimental result shown in drawing 19 is an experimental result using 760 pieces of information that the need / unnecessary label attachment was made by the user. Information filter equipment is made to learn the data of 200 affairs, and the retrieval effectiveness when searching by the retrieval-by-keyword type at which the retrieval-by-keyword type generation equipment of this invention using the 1st approach generated the remaining data of 560 affairs is shown in it. The axis of abscissa shows the number of the terms of a retrieval-by-keyword type, and the informational rate that the axis of ordinate was searched. It is shown whether it is the

information which a user needs in what% of the information from which the dotted line was taken [ what % of the information for which a user needs a continuous line was taken out, what % of the whole information as for the broken line, was taken out, and ] out.

[0229] As mentioned above, according to this invention, the required information included in the information which could take out about 90% of the information which needs the number of terms about about ten, and was then taken out is rising to about 60%, and is clearly understood that this invention is effective.

[0230]

[Effect of the Invention] As mentioned above, the vector generation section which changes into a vector two or more keywords to which this invention was assigned by information, Said vector and the score count section which calculates a score using the educator signal from a user, The metric study section which calculates metric one used in case the need [ of calculating need and dependability from said score ] count section, and the score count section calculate a score based on the need for the information to which it is given by the user / simple assessment of being unnecessary is prepared. By putting information in order according to whenever [ need / for a user ], and providing sequentially from the high information on need to a user, the information that precision is high can be acquired also to a beginner, and the information filter equipment which the information for a user that need is still higher tends to take out can be offered.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] Block schematics of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 2] Block schematics showing the outline of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 3] The flow chart explaining actuation of the vector generation section of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 4] The flow chart explaining actuation of the unread data write-in control section of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 5] The flow chart explaining actuation of the unread data output control section of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 6] The flow chart explaining actuation of the learning-control section of the

information filter equipment of the gestalt 1 of operation of this invention

[Drawing 7] The flow chart explaining actuation of the metric study section of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 8] The flow chart explaining actuation of the judgment side study section of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 9] Drawing for explaining actuation of the judgment side study section of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 10] Drawing for explaining actuation of the judgment side study section of the information filter equipment of the gestalt 1 of operation of this invention

[Drawing 11] Block schematics of the information filter equipment of the gestalt 2 of operation of this invention

[Drawing 12] The flow chart explaining actuation of the dictionary study section of the information filter equipment of the gestalt 2 of operation of this invention

[Drawing 13] Block schematics showing the outline of the database reconstruction equipment of the gestalt 3 of operation of this invention

[Drawing 14] Block schematics of the retrieval-by-keyword type generation equipment of the gestalt 4 of operation of this invention

[Drawing 15] The flow chart explaining the actuation in the first half of retrieval-by-keyword type generation of the retrieval-by-keyword type generation equipment of the gestalt 4 of operation of this invention

[Drawing 16] The flow chart explaining the actuation in the second half of the retrieval-by-keyword type generation at the time of using the 1st approach of the retrieval-by-keyword type generation equipment of the gestalt 4 operation of this invention

[Drawing 17] The flow chart explaining the actuation in the second half of the retrieval-by-keyword type generation at the time of using the 2nd approach of the retrieval-by-keyword type generation equipment of the gestalt 4 operation of this invention

[Drawing 18] The flow chart explaining the actuation in the second half of the retrieval-by-keyword type generation at the time of using the 3rd approach of the retrieval-by-keyword type generation equipment of the gestalt 4 operation of this invention

[Drawing 19] Drawing explaining the effectiveness of retrieval-by-keyword type generation of the retrieval-by-keyword type generation equipment of the gestalt 4 of operation of this invention

[Description of Notations]

1 Vector Generation Section

2 Dictionary Storage Section

3 Score Count Section

5 Affirmation Metric Storage Section

6 Negative Metric Storage Section
7 Need Count Section
8 Judgment Parameter Storage Section
9 Unread Data Write-in Control Section
10 Unread Data Storage Section
11 Unread Data Output Control Section
12 Educator Data Control Section
13 Educator Data Storage Section
14 Learning-Control Section
16 Switch
17 Switch
18 Switch
19 Metric Study Section
20 Vector Generation Section for Study
21 Judgment Side Study Section
22 Score Count Section
23 Dictionary Study Section
24 Adaptation Sign Dictionary Storage Section
25 Count Storage Section
26 Primary Affirmation Metric Storage Section
27 Primary Negation Metric Storage Section
28 KD Metric Study Section
30 Keyword Assessment Section
31 Keyword Assessment Signal Sort Section
32 Retrieval-by-Keyword Type Generation Section
50 Information Filtering Unit
51 Interface Unit
52 Study Unit
60 Database Storage Section
61 Database Read-out Section
62 Database Reconstruction Control Section
63 Switch
64 Adaptation Database Write-in Section
65 Adaptation Database Storage Section
100 Information Input Terminal
101 The Number Signal Input Terminal of Keywords
102 Keyword Signal Input Terminal
103 Data Read-out Start Signal Input Terminal
104 Data Display Terminal
105 Educator Signal Input Terminal

106 Study Start Signal Input Terminal
107 Learning-Control Section Indication Signal Output Terminal
110 Unread Data-Division Directions Terminal
111 Retrieval-by-Keyword Type Generation Start Signal Input Terminal
112 The Retrieval-by-Keyword Type Approach Change Signal Input Terminal
113 Retrieval-by-Keyword Type Signal Output Terminal
114 Arity Signal Input Terminal
200 Control Signal Input Terminal
201 The Number Signal Input Terminal of Study
210 Database Reconstruction Control-Lead Signal Output Terminal
221 Affirmation Signal Count Section for Study
222 Negative Signal Count Section for Study